U.S. DEPARTMENT
OF TRANSPORTATION

Preliminary Training For Drug Evaluation and Classification Program

"The Pre-School"

January 2006 Edition

Instructor Manual

NHTSA
People Saving People

Table of Contents

PRELIMINARY TRAINING

FOR DRUG EVALUATION AND CLASSIFICATION

ADMINISTRATOR'S GUIDE

HS 172A R1/06

TABLE OF CONTENTS

A. Purpose of This Document

This Administrator's Guide provides an introduction to and an overview of the two-day course entitled "Preliminary Training for Drug Evaluation and Classification". This course is the first in a series of three training programs that, collectively, prepare police officers and other qualified persons to serve as Drug Recognition Experts (DREs). In some law enforcement agencies, these officers are known as Drug Recognition Technicians. The International Association of Chiefs of Police (IACP) have adopted "DRE" as the generic title for the persons who carry out this program.

A person who satisfactorily completes this Preliminary Training program is eligible for advancement to the second stage of DRE training, i.e., the seven-day classroom program in Drug Evaluation and Classification. The seven-day course commonly is called the "DRE School", to distinguish it from this two-day preliminary course (known as the "Pre-School"). Upon successful completion of the seven-day DRE School, the officer graduates to the final, or Certification Phase, of his or her training. The Certification Phase is conducted on-the-job: under the supervision of duly-authorized instructors, the DRE trainee conducts evaluations of persons actually under arrest on suspicion of drug impairment. The instructors evaluate the trainee's skill in conducting drug recognition examinations, and also evaluate his or her judgment in forming opinions as to the category or combination of categories of drugs causing the impairment evident in the suspects. And, the trainee's opinions are compared with the results of toxicological examinations, when they are available.

This Administrator's Guide is intended to facilitate planning and implementation of the Preliminary Training Program. The Guide overviews the two-day course of instruction and also overviews the documents that make up the curriculum package.

B. Overview of the Course

1. For Whom Is The Training Intended?

   This course is designed for people who have been selected to serve as DREs. No one is permitted to enroll in the Pre-School unless he or she intend to proceed through the sub-sequent stages of training, and ultimately achieve certification as a DRE. The emphasis here should be kept on the concept of actual service as DREs. The skills that a DRE applies can be kept sharp only if they are frequently used.

There is no point in offering this training to someone who will not routinely and regularly evaluate drug-impaired suspects, since that person would quickly lose whatever competence he or she gained through the training. The DRE's job is not like riding a bicycle: one can and will forget how to do it properly unless he or she does it frequently. Agencies interested in this training should take special note that it is not desirable to send full-time instructors to this course, with the intent of having those instructors come home and teach others. Unless provisions are made to have those instructors actually work as DREs, their ability to serve competently as teachers of other DREs will vanish rapidly. It is far preferable to select trainees who will subsequently serve primarily as DRE practitioners, and who can be called upon part-time to serve as trainers.

Anyone selected as a DRE trainee must be fully competent with the Standardized Field Sobriety Tests (SFSTs), i.e., Horizontal Gaze Nystagmus, Walk and Turn, and One Leg Stand. No one can progress to the seven-day DRE School until he or she demonstrates proficiency with the three SFSTs.

2. What Is The Goal Of This Training?

The goal of this two-day Pre-School is succinct:

To prepare the student to participate successfully in his or her formal classroom training in the drug recognition process, i.e., the seven-day DRE School.

3. What Will The Students Get Out Of The Training?

As a result of successfully completing this Pre-School, the students will be better able to:

(1) Define the term "drug" and name the seven categories.

(2) Identify the twelve major components of the drug recognition process.

(3) Administer and interpret the psychophysical tests used in the process.

(4) Conduct the eye examinations used in the process.

(5) Check the vital signs that are relevant to the process.

(6) List the major signs and symptoms associated with each drug category.

(7) Describe the history and physiology of alcohol as a drug.

These are a subset of the competencies expected of DRE trainees by the completion of the seven-day DRE School; the Pre-School gives them a "head start" toward achieving those skills.

4. What Subject Matter Does The Course Cover?

The Pre-School covers concepts and skills that are fundamental to the DRE's job.

- A traffic safety-oriented definition of what constitutes a "drug" (i.e., Any substance which when taken into the human body can impair the ability of the person to operate a vehicle safely.

- Enumeration of seven distinct categories of drugs; the drug recognition process allows the DRE to identify which category or combination of categories is causing the impairment evident in a subject

- Demonstrations of and practice with four divided attention psychophysical tests that are used to assess impairment during a drug evaluation.

- Demonstration of and practice with the three eye examinations that provide cues of the possible presence of various drug categories.

- Demonstrations of and practice with checks of certain vital signs that point to the possible presence of various drug categories.

- A review of the major observable signs that distinguish the categories from each other.

5. What Activities Take Place During The Training?

Although a certain minimal amount of formal lectures are required, the course consists primarily of hands-on practice. Students repeatedly drill in the divided attention tests, the eye examinations and in performing checks of the vital signs. A controlled drinking exercise (involving volunteers who are not members of the class) provides an opportunity to practice assessing impairment on the divided attention tests.

6. How Long Does The Training Take?

   The training encompasses approximately 13 and ½ hours of actual instruction. With breaks, this occupies two full training days.

C. Overview of the Curriculum Package

1. Instructor's Lesson Plans

   The Instructor's Lesson Plans are a complete and detailed outline of what is to be taught in the Pre-School (i.e. the subject matter) and also of how it is to be taught (i.e., the instructional methods). The lesson plans are organized into modules. Each module corresponds to one of the course's ten sessions.

   Each module consists of a cover page; an outline page; the lesson plans themselves; and copies of any visuals referenced in the lesson plans.

   The cover page presents the session's title and the total time required to conduct the session.

   The outline page presents the training objectives for the session, i.e. exactly what the student will be able to do as a result of successfully completing the session. The outline page also lists the major content segments of the session, as well as the principal instructional activities that take place during the session.

   The lesson plans themselves are arrayed in a standard two-column format. The left-side column contains the outline of "content", or the subject matter to be taught. The right-side column outlines the "instructional notes", or how the content is to be taught.

   The Instructor's Lesson Plans serve, first, to prepare the instructor to teach the course. He or she should review the entire set of plans, for all ten sessions, to become familiar with the content and learning activities and develop a clear understanding of how the course fits together. The instructor is expected to become thoroughly familiar with each lesson plan segment that he or she is assigned to teach; to prepare acetate copies of the visuals; to assemble all "props" and materials needed to deliver the lesson; and, to augment the instructional notes, as necessary and appropriate, to ensure that his or her own style and experience are applied to teaching the lesson.

Subsequently, the Instructor's Lesson Plans serve as an in-class reference document for the instructor, to help him or her maintain the sequence and pace of training.

It is worth emphasizing that the lesson plans are not speeches. Although the outlines of content and instruction-al notes are fairly detailed, those outlines are not to be read verbatim to the students. This training is intended to be a dynamic and highly interactive learning experience. It must not be permitted to degenerate into a series of mere lectures.

2. Visual Aids

Four kinds of audio-visual aids are employed in the Pre-School:

- o wallcharts
- o Dry erase board/flip-chart presentations
- o visuals, i.e. PowerPoint slides
- o video tape/DVD

The wallcharts are permanently displayed items. They consist of sketches with brief captions, intended to depict major themes and segments of the course. The wallcharts should be positioned high on the far left and right sides of the classroom's front wall where they will be visible without occupying the center of attention.

The dry erase board/flip-chart presentations are outlined in the "instructional notes" column of the lesson plans, and are self-explanatory.

The visuals are simple graphic and/or narrative displays that emphasize key points and support the instructor's presentations. In the "instructional notes", these are referred to as "visuals". Paper copies of all "visuals" are found at the end of each module.

The video tape/DVD is a portrayal of major components of the drug evaluation. This same tape is used in the 7-day DRE School.

D. General Administrative Requirements

1. Facility Requirements

   The Pre-School requires a classroom with ample table/desk space for each student; an audio visual projector and screen; a video tape/DVD player and one or more monitors easily visible to all students; and, a chalkboard and/or flip-chart. The classroom must have sufficient open space to permit instructors to give full and unimpeded demonstrations of the divided attention tests; the eye examinations; and the checks of vital signs. And, the arrangement of the classroom must permit the students to have full view of these demonstrations.

   Adequate space must be available to permit the students to practice the various tests and checks that the instructors demonstrate. The practice space may be a room separate from the classroom; a gymnasium often serves quite well for the practice segments.

   The Alcohol Workshop also requires a separate room where the volunteers can do their drinking. Breath testing instruments and operators must be available to monitor the volunteers' BACs.

2. Instructor Qualifications

   All faculty for the Pre-School must be duly certified DREs. The principal instructor, at least, must have completed DRE Instructor Training.

3. Class Size Considerations

   This course is a highly participative learning experience. A significant amount of hands-on practice requiring close supervision and coaching takes place. Because of the nature of this training, the recommended maximum class size is 25 students. A more nearly ideal range would be 15 to 20.

4. Requirements For The Controlled Drinking Practice Sessions

   Both the DRE Pre-School and DRE seven-day course require an alcohol workshop and the use of volunteer drinkers. The participation of volunteers who will consume carefully measured quantities of alcohol and submit to examinations administered by the students. Without these volunteers, students have no opportunity to practice administering the tests under reasonably realistic circumstances, or to practice interpreting test results. Drinking volunteers, then, are an essential resource for this training. But

they can be a difficult, even unpleasant, resource with which to work. Careful steps must be taken to insure that the volunteers contribute to a worthwhile learning experience, and suffer no harm themselves nor cause any harm to others.

The following criteria define who can be considered as drinking volunteers.

- They cannot be members of the class.
- They must be at least 21 years old.
- They cannot have any history of alcoholism.
- They cannot be known to suffer from any medical condition that may be exacerbated by alcohol (such as hypertension or diabetes).
- They cannot be taking any medication (prescription or otherwise) that might interact with alcohol.
- They must be in good physical health, and have no impairments of vision or limbs that might affect their performance of the Standardized Field Sobriety Tests.
- They must be under 60 years of age, and less than 50 pounds overweight (conditions for which the standardized divided attention tests have not been validated).

Every volunteer drinker participating in the alcohol workshop must read and sign the "Statement of Informed Consent" before receiving any alcohol. The Course Administrator or a designated DRE Instructor will obtain the individual signatures from each of the volunteer drinkers prior to commencing the alcohol workshop.

Transportation must be provided for the volunteers to and from the training session. Under no circumstances may a volunteer be permitted to drive from the training session, regardless of his or her blood alcohol concentration at the time of departure. Volunteers should be released only into the custody of responsible, sober persons.

The practice sessions require a minimum of one drinking volunteer for every five students. A more desirable ratio is one volunteer for every three students. Thus, for a class of 25 students, at least 5 volunteers, and preferably 8 or 9 must participate in each session.

The effectiveness of the volunteers, as training resources, very much depends on their blood alcohol concentrations. If a volunteer's BAC is too low (i.e., below 0.06), he or she generally will provide a poor simulation of a typical DWI subject If the BAC is too high (i.e., above 0.15), the volunteer's state of inebriation usually will be evident without standardized sobriety testing, and the learning experience will not contribute as effectively as possible to sharpening the students' detection skills.

Ideally, approximately half of the volunteers at any session should achieve peak BACs between 0.12 and 0.14 and the other half between 0.06 and 0.08. But this is very difficult to control. It is always preferable to err, if necessary, on the low side: it is better to fail to get volunteers as "high" as desired, rather than to get them too "high".

Volunteers should be instructed to refrain from eating two hours prior to their arrival at the training facility. Food in their stomachs may dramatically affect the absorption of alcohol into their bloodstreams, and significantly impede your ability to control the peak BACs they achieve.

Volunteers should be brought to the training facility two hours before the practice session is scheduled to begin. Each volunteer should be breath tested immediately upon arrival to verify that his or her BAC is zero.

The table below indicates the ounces of 80-proof distilled alcoholic beverage that volunteers should consume, in relation to their weight and the "target" peak BAC, during a three(3) hour interval to reach a target BAC of 0.12-0.14 percent.

GUIDELINES FOR ACHIEVING TARGET BAC'S DURING A THREE (3) HOUR INTERVAL

Ounces of 80-Proof Alcoholic Beverage to Reach a B.A.C. of 0.12.

Weight (Pounds)	MEN	WOMEN
110	5	4
120	6	5
130	6	5
140	7	5
150	7	6
160	8	6
170	8	7
180	9	7
190	9	7
200	10	8
210	10	8
220	10	8
230	11	9
240	11	9
250	12	10

It is recommended that volunteers consume half of the total allocated amount of alcoholic beverage during the first hour following their arrival at the testing facility. They should refrain from drinking or smoking prior to any breath test.

NOTE: A volunteer may cease drinking at any time.

NOTE: No weapons should be present in the vicinity of any drinking volunteer.

Volunteers must be kept under constant supervision from the time of their arrival at the training facility. At least one instructor's aide must be present for every four volunteers. The aids must monitor the volunteers, serve their drinks, make sure that they comply with the schedule, and in general keep them under close observation.

NOTE: For a more complete description of Alcohol Workshop procedures, refer to the latest edition of the Student-Instructor's Manual for the DRE Instructor Training School, and specifically Unit Nine, "Planning and Managing an Alcohol Workshop".

International Association of Chiefs of Police

Drug Evaluation and Classification Program

Drug Influence Report Checklist

_____ 1. Breath alcohol test

_____ 2. Interview of arresting officer
(Note: Gloves must be worn from this point on.)

_____ 3. Preliminary examination and first pulse

_____ 4. Eye examinations

_____ 5. Divided attention tests:

_____ Romberg balance
_____ Walk and turn
_____ One leg stand
_____ Finger to nose

_____ 6. Vital signs and second pulse

_____ 7. Dark room examinations and ingestion examination

_____ 8. Check for muscle tone

_____ 9. Check for injection sites and third pulse

_____ 10. Interrogation, statements, and other observations

_____ 11. Opinion of evaluator

_____ 12. Toxicological examination

Thirty-Five Minutes

SESSION I

INTRODUCTION AND OVERVIEW

SESSION I INTRODUCTION AND OVERVIEW

Upon successfully completing this session the student will be able to:

- State the goal and objectives of the course.
- Define the term "drug" as it is used in the course.
- Name the seven categories of drugs and give at least one example of each category.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Welcoming Remarks and Objectives	o Instructor-Led Presentations
B. Definition and Categories of Drugs	

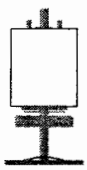
Aides	Lesson Plan	Instructor Notes
 **35 Minutes**	**INTRODUCTION AND OVERVIEW**	
	**A. Welcoming Remarks and Objectives**	
 **10 Minutes**		
I-1 (Title)	1. Welcome to the Preliminary Training for the Drug Evaluation and Classification Program.	Display Session Title
	2. Instructor introductions.	
	a. Principal instructor(s).	Instructors' names and students' names on tent cards.
	b. Apprentice instructors.	
I-2 (Goal)	3. Preliminary training goal: To prepare the students to participate successfully in the 7-day Drug Recognition Expert school.	<u>Inform</u> the students of when and where their formal, seven-day DRE School will take place.
	a. This two-day Preliminary School won't make you DREs.	
	b. But it will make it easier for you to pass the 7-day DRE School and successfully complete your certification training.	
		
I-3 (First 3 Objectives)	4. Objectives of the Preliminary Training:	

Aides	Lesson Plan	Instructor Notes
 **I-3B** (Last 4 Objectives)	a. Define "Drug" and name the seven categories. b. Identify the twelve components or steps in the DEC drug influence examination. c. Administer and interpret the Psychophysical Tests used by DRE's during the drug influence evaluation d. Check and measure a subject's vital signs. e. List the major signs and symptoms of each drug category. f. Conduct the eye examinations that are part of the drug influence evaluation. g. Describe the history and physiology of alcohol as a drug.	Solicit students' questions about the goal and objectives.
	5. Key point of emphasis: This two-day school is only the first of three stages in your training as DREs. a. Next will come the seven-day formal DRE school. b. After that will come at least several weeks of supervised on-the-job training known as the "Certification Phase".	Solicit students' questions about the three stages of training.
	6. Preview of the remainder of the Pre-School.	Briefly outline the upcoming sessions of the school. Refer to

Aides	Lesson Plan	Instructor Notes
		the wallcharts.
	7. Certification Progress Logs.	Instruct students to open their manuals and remove the Certification Progress Log. Have students fill out the first line of the log, then collect it.
	**B. Definition and Categories of Drugs**	Pose this question. Solicit responses from several students
25 Minutes		
	1. What do we mean by the word "drug"?	 Source: Webster's Seventh New Collegiate Dictionary, 1971 edition.
	a. Alternative definitions, drawn from several sources.	
	o "A substance used as a medicine or in making medicines."	Ask students: "Would you agree that all drugs are medicines or ingredients of medicines?" Ask students to name some substances they consider to be "drugs" that have no medicinal value.
	o "A narcotic substance or preparation."	 Source: Webster's. Ask students if they agree that all drugs are narcotics.
	o "A chemical substance administered to a	 Source: Random House College

Aides	Lesson Plan	Instructor Notes
	person or animal to prevent or cure disease or otherwise to enhance physical or mental welfare."	Dictionary, 1982 edition. Point out that this definition seems to exclude any drug that is harmful or does not enhance welfare.
	o "A habit-forming medicinal substance, especially a narcotic."	 Source: Random House Ask students if they agree that all drugs are habit-forming. Ask if, from an enforcement perspective, they can think of any habit-forming substances they would not ordinarily consider to be a drug.
	o A substance taken by mouth, injected or applied locally to treat a disorder. (i.e., to ease pain)	
	o A chemical substance introduced into the body to cause pleasure or a sense of changed awareness, as in the non-medical use of Lysergic Acid Diethylamide (LSD).	 Source: Medical Dictionary For The Non-professional, Barows Educational Series, Inc., Woodbury, NY. 1984
	o "Any substance, natural or artificial that by chemical nature alters the structure or function of a living organism."	 Source: Los Angeles Police Department Drug Recognition Training, May 1986.
	o "Any substance that, in small amounts, produces changes in the body, mind or both."	 Source: LAPD

Aides	Lesson Plan	Instructor Notes
 **I-4** (Working Definition of Drug)	2. A simple, enforcement-oriented definition of drugs. o "Any substance, which, when taken into the human body, can impair the ability of the person to operate a vehicle safely."	Working definition derived from the 1985 California Vehicle Code. <u>Point out</u> that this definition excludes many substances that ordinarily would be considered "drugs" by physicians, chemists, etc. Emphasize that, as traffic law enforcement officers, the students' concern has to remain focused on substances that impair.
	3. Within this simple, enforcement-oriented definition, there are seven categories of drugs. a. Each category consists of substances that impair a person's ability to drive. b. The categories differ from one another in terms of <u>how</u> they impair driving ability and in terms of the <u>kinds</u> of impairment they cause. c. Because the categories produce different types of impairment, they generate different signs and symptoms.	<u>Note</u>: Emphasize that the DEC Program drug categories differ from those of the American Medical Association and the Drug Enforcement Administration because they categorize drugs on the basis of their <u>chemical structures</u>, while we categorize drugs on the basis of the <u>kinds of impairment</u> they produce.

Aides	Lesson Plan	Instructor Notes
	d. With training and practice, you will be able to recognize the different signs of drug influence and determine which category is causing the impairment you observe in a suspect.	
		Ask students: "What are the seven categories of drugs?" Write the names of the categories on the dry erase board or flip-chart as they are mentioned by the students.
	4. Central Nervous System Depressants.	
I-5 (Depressants)		
	a. The category of CNS Depressants includes some of the most commonly abused drugs.	Point out that Chloral hydrate sometimes is called "Mickey Finn" or "Knockout drops".
	o Alcohol - - the most familiar drug of all - - is abused by an estimated 40-50 million Americans.	
	o It's estimated that 119 million Americans aged 12 or older reported being current drinkers of alcohol in 2002 (51.0 percent of the population)	Source: National Survey on Drug Use and Health (NSDUH, 2003
	o In 2002, more than three million prescriptions were filled for over 500,000 different drugs in the	Source: National Center on Addition and Substance Abuse, Columbia University, 2005

Aides	Lesson Plan	Instructor Notes
	U.S.; 234 million for controlled prescription drugs.	
	o It is also estimated that in 2003 there were 6.3 million Americans age 12 or older using prescription drugs non-medically.	Source: National Survey on Drug Use and Health (NSDUH, 2003
	b. Depressants slow down the operation of the central nervous system (i.e., the brain, brain stem and spinal cord).	
	o cause the user to react more slowly.	
	o cause the user to process information more slowly.	
	o relieve anxiety and tension.	
	o induce sedation, drowsiness and sleep.	
	o in high enough doses, CNS depressants will produce general anesthesia.	i.e. depress the brain's ability to sense pain.
	o in very high doses, induce coma and death.	
	5. Central Nervous System Stimulants	
I-6 (Stimulants)		
	a. CNS Stimulants are a widely abused category of drugs.	

Aides	Lesson Plan	Instructor Notes
	o In 2000, there were an estimated 2.7 million chronic cocaine users and 3 million occasional cocaine users in the U.S.	Source: Office of National Drug Control Policy (ONDCP) Cocaine Fact Sheet
	o The use and abuse of Methamphetamine continues to rise and has quickly become one of the major drugs of abuse.	Note: Instructors may wish to local state Methamphetamine data here.
	o Several million appear to use amphetamines.	
	b. CNS Stimulants speed up the operation of the central nervous system, and of the various bodily functions controlled by the central nervous system.	
	o cause the user to become hyperactive, extremely talkative.	
	o speech may become rapid and repetitive.	
	o heart rate increases.	
	o blood pressure increases.	
	o body temperature rises, user may become excessively sweaty.	
	o induce emotional excitement, restlessness, irritability.	
	o can induce cardiac arrhythmia (unstable	Remind students of well-known athletes and others who have

Aides	Lesson Plan	Instructor Notes
	beating of the heart), cardiac seizures and death.	died because of cocaine abuse.
 **I-7** (Hallucin-ogens)	6. Hallucinogens	
	a. Hallucinogens are also widely abused In recent years an increase in the abuse of both LSD and Ecstasy (MDMA) has been reported	Point out that LSD and Peyote are only two examples of hallucinogens.
	b. It is estimated that approximately one million Americans abuse hallucinogens.	
	c. Hallucinogens may create hallucinations. That is, they may create apparent perceptions of things not truly present.	
	d. Hallucinogens may also create very distorted perceptions, so that the user sees, hears and smells things in a way quite different from how they really look, sound and smell.	
	e. Instead, hallucinogens cause the nervous system to send strange or false signals to the brain.	
	o produce sights, sounds and odors that aren't real.	
	o induce a temporary condition very much like psychosis or insanity.	

Aides	Lesson Plan	Instructor Notes
	o can create a "mixing" of sensory modes, for example for example the user "hears colors", "sees music", "tastes sounds", etc., referred to as "Synesthesia."	Point out that, with all of these false and distorted perceptions, the person under the influence of hallucinogens would be a very unsafe driver.
 **I-8** (Dissoc, Anesthetics)	7. Dissociative Anesthetics	Point out that this category used to be Phencyclidine (PCP) but was changed in 2005.
	a. This category includes drugs such as PCP and it's analogs along with other drugs that generally inhibits pain by cutting off or "dissociating" the brain's perception of the pain.	Point out that the definition of Dissociative Anesthetic is contained in the Glossy of Terms in the DRE Pre-School Student Manual.
	b. PCP is considered to be by the medical community an hallucinogen. However, because of the symptomatology it presents; it is included in this category.	Point out that people under the influence of PCP may exhibit a combination of the signs associated with hallucinogens, CNS stimulants and depressants.
	c. PCP is a synthetic drug, i.e., it does not occur naturally but must be produced in a laboratory-like setting.	
	d. PCP is similar to CNS depressants in that it depresses brain wave activity. o slows down thought o slows reaction time o slows verbal responses	

Aides	Lesson Plan	Instructor Notes
	e. But PCP is similar to CNS stimulants in that it activates the parts of the brain that control emotions, the heart and the other autonomic systems. o heart rate increases o blood pressure increases o adrenalin production increases o body temperature rises o muscles become rigid f. And PCP is similar to hallucinogens in that it distorts or "scrambles" signals received by the brain. o sight, hearing, taste, smell and touch may all be distorted o user's perception of time and space may be distorted o user may become paranoid, feel isolated and depressed o user may develop a strong fear of and pre-occupation with death o user may become unpredictably violent g. PCP analogs include Ketamine, Ketalar, Ketajet, and Ketaset.	

Aides	Lesson Plan	Instructor Notes
 **I-9** (Narcotics)	8. Narcotic Analgesics a. There are two subcategories of Narcotic Analgesics o Opiates are derivatives of opium o Synthetics are produced chemically in the laboratory. They are not in any way derived from Opium but produce similar effects	<u>Point out</u> that heroin, morphine and codeine are natural derivatives of opium.
	b. The word "Analgesic" means pain-killer. All of the drugs in this category reduce the person's reaction to pain.	
	c. Heroin is the most commonly abused of the Narcotic Analgesics. It is estimated that approximately 2.5 million people have used heroin (lifetime).	Source: National Institute of Drug Abuse (NIDA), 2003
	d. Heroin is highly addictive, and very expensive. o Many addicts support their habit by stealing property and converting it to cash.	
	e. In addition to reducing pain, Narcotic Analgesics produce euphoria, drowsiness, apathy, lessened physical activity and sometimes impaired vision.	
	f. Persons under the influence of Narcotic Analgesics often pass into a semi-conscious	<u>Point out</u> that this condition is often called being "on the nod".

type of sleep or near-sleep.

- o persons "on the nod" may be awakened easily.
- o they often are sufficiently alert to respond to questions effectively.

g. Higher doses of Narcotic Analgesics can induce coma, respiratory failure and death.

I-10
(Inhalants)

9. Inhalants

a. Inhalants are fumes of certain substances that produce mind-altering results.

b. There are three sub-categories of inhalants:

- o Volatile Solvents (e.g., gasoline, glue, oil-based paint, cleaning fluids, paint remover, etc.)
- o Aerosols (i.e., the propellant gases in spray cans, e.g., hair sprays, insecticides, etc.)
- o Anesthetic Gases (e.g., nitrous oxide, ether, amyl nitrite, butyl nitrite, etc.)

c. Different inhalants produce different effects.

- o many produce effects similar to those of CNS depressants.
- o a few produce stimulant like effects.

Aides	Lesson Plan	Instructor Notes
	o some produce hallucinogenic effects.	
	d. The inhalant abuser's attitude and demeanor can vary from inattentive, stuporous and passive to irritable, violent and dangerous.	
	e. The abuser's speech will often be slow, thick and slurred.	
	10. Cannabis	
I-11 (Cannabis)		
	a. The category "Cannabis" includes the various forms and products of the Cannabis Sativa plant.	Write "Cannabis Sativa" on the dry erase board or flip-chart.
	b. The active ingredient in Cannabis products is the substance known as "Delta-9 Tetrahydrocannabinol", or "THC".	Write "Δ-9 THC" on the dry erase board or flip-chart.
	c. Apart from alcohol, marijuana is one of the most commonly abused drugs in this country.	
	d. Marijuana continues to be the most used illegal drug in the U.S.; nearly 69 million Americans over the age of 12 have used marijuana at least once. It is also estimated that there were 14.6 million users of marijuana in 2002.	Source: NIDA and Marijuana Addiction Facts. Source: The Drug Abuse Warning Network (DAWN) Report, August 2003.

Aides	Lesson Plan	Instructor Notes
	e. Cannabis appears to interfere with the attention process. Drivers under the influence of marijuana often do not pay attention to their driving.	Point out that divided attention Standardized Field Sobriety Tests usually disclose the best evidence of cannabis impairment.
	f. Cannabis also produces a distortion of the user's perception of time, an increased heart rate (often over 100 beats per minute) and a reddening of the eyes.	
	g. Marijuana is the most frequently reported drug in emergency department visits related to drug abuse in youth age 12 to 19.	Source: The Drug Abuse Warning Network (DAWN) Report, August 2003.
I-12 (Frequency of Drug Use)	11. Frequency of Drug Use	
	o In 2003, 51 percent of persons age 12 or older (119 million) were current alcohol drinkers.	Source: National Survey on Drug Use and Health (NSDUH), 2003
	o The exact number of prescription drug users in the U.S. is unknown. However, in 2003, the National Association of Chain Drug Stores (NACDS) reported that 3.14 billion scripts for prescription drugs were written in the U.S.	Source: National Survey on Drug Use and Health (NSDUH), 2003
	o It is estimated that in 2003 there were 6.3 million Americans age 12 and older using prescription drugs non-medically.	Source: National Survey on Drug Use and Health (NSDUH), 2003
	o 51% of students have tried an illicit drug by the time they finish high school	Source: National Association of Chain Drug Stores (NACDS), 2003

Aides	Lesson Plan	Instructor Notes
	o 16.6% of drivers age 21 and older (30.7 million persons) admitted driving under the influence of alcohol or illicit drugs during the past year.	Source: "Driving Under the Influence Among Adult Drivers", SAMHSA, 2005.
	o Approximately 2.4 million Americans began abusing prescription drugs within the past year. The average age of new users was 23.3 years.	Source: 2004 National Survey on Drug Use and Health (NSDUH).
	12. Polydrug Use	
	a. Though drug evaluation subjects may be under the influence of any one of the mentioned categories of drugs, it is not uncommon to find individuals who have taken several combinations of drugs. Data being collected through the national DRE Database indicates that approximately 25% of all toxicology results indicate two or more drug categories.	Point out that the Pacific Institute of Research and Evaluation (PIRE) maintains the national DRE data reporting system for the DEC Program and that DRE's will be encouraged to entry evaluation data into the website.
	b. The term "polydrug" use refers to instances where the subject has ingested drugs from two or more drug categories.	Point out that the drugs do not have to be actually ingested at exactly the same time.
	c. Most controlled prescription drug abusers are poly-drug abusers. One study reported that approximately 75 percent of persons who abuse alcohol also abuse illicit drugs.	Source: "Under the Counter: The Diversion and Abuse of Controlled Prescription Drugs in the U.S.", National Center on Addiction and Substance Abuse, July 2005

REVIEW QUESTIONS

Test your knowledge of the subject matter covered in this session by trying to answer the following questions. Answers are given on the next page.

1. What is a "drug" as the term is used in this course?

   For the purpose of this training, a "drug" is any substance which when taken into the human body, can impair the ability of the person to operate a vehicle safely".

2. What are the seven major categories of drugs?

   CNS Depressants, CNS Stimulants, Hallucinogens, Dissociative Anesthetics, Narcotic Analgesics, Inhalants and Cannabis.

3. What kind (category) of drug is alcohol? What about Cocaine? What about Heroin?

   Alcohol is a CNS Depressant. Cocaine is a CNS Stimulant. Heroin is a Narcotic Analgesic.

4. How would you respond to someone who suggests that the "drug problem" basically occurs only in a few metropolitan areas, and doesn't apply to their community?

   There might be some rare communities in this country that are free from the "drug problem", but they would be rate indeed. A conservative estimate suggests that about 40-50 million Americans regularly use drugs other than alcohol. However, the exact number is not known.

5. What category of drug is PCP classified? What about Marijuana? What about Valium?

   PCP belongs to the Dissociative Anesthetics category. Marijuana is Cannabis and Valium is a CNS Depressant.

6. What category of drug is Methamphetamine? What about LSD? What about Peyote?

   Methamphetamine is a CNS Depressant. LSD and Peyote are Hallucinogens.

7. What does the term "polydrug use" mean?

"Polydrug use" is the practice of ingesting drugs from two or more drug categories, i.e., combining drugs.

IACP

Drug Evaluation and Classification Certification Progress Log

Please Print

Candidate's Name_____

Agency_____ Phone (_____)_____

Address_____

City_____ State_____ Zip_____

Item or Step	Date Completed	Location	Authorized Signature	IACP DRE#	Agency
DRE Pre-School					
SFST Proficiency					
DRE School					
DRE School Final Exam					
Evaluation #1					
Evaluation #2					
Evaluation #3					
Evaluation #4					
Evaluation #5					
Evaluation #6					
Evaluation #7					
Evaluation #8					
Evaluation #9					
Evaluation #10					
Evaluation #11					
Evaluation #12*					
Certification Knowledge Exam					
C.V. Reviewed and Approved					
Completed the Minimum Number of Evaluations**					
Identify the Minimum Number of Drug Categories**					
"Rolling" Log Reviewed					
Toxicologies Consistent**					
Recommendations for Certification (Standard 1.15)			**Authorized Signature**	**IACP DRE#**	**Date**
I/We certify that this student satisfactorily met the IACP National Standards for the Drug Evaluation and Classification Program and is recommended for certification. (Standards 1.15)					
I recommend this student for certification. (Agency Coordinator – if applicable)					
I recommend this student for certification. (State Coordinator)					

*Please use reverse side to record additional evaluations if necessary.

**Please see reverse side for the exact language of these standards.

Use the back page for additional comments.

Revised 01/06

Item or Step	Date Completed	Location	Authorized Signature	IACP DRE#	Agency
Evaluation #13					
Evaluation #14					
Evaluation #15					
Evaluation #16					
Evaluation #17					
Evaluation #18					
Evaluation #19					
Evaluation #20					

Standard 1.9 Upon completion of the field certification phase of training, the candidate must demonstrate the ability to conduct a complete drug evaluation in an approved sequence and appropriately document and interpret the results. The candidate must also be able to document the findings of the evaluation and demonstrate proficiency in interviewing techniques.

Standard 1.10 To be considered for certification as a drug recognition expert, the candidate must satisfactorily complete a minimum of twelve (12) drug evaluations, during which the candidate must encounter and identify subjects under the influence of at least three of the drug categories as described in the DRE training program.

Of the evaluations required for certification, the candidate shall administer at least six evaluations. The candidate may observe the remaining evaluations. For each evaluation, either administered or observed, the candidate shall independently record the observations and results of the evaluation, and shall identify the category(s) of drugs affecting the subject.

All evaluations, either administered or observed, and documented for certification purposes, **shall be supervised by at least one certified DRE Instructor.**

Standard 1.11 Prior to completing the certification phase of training, the candidate DRE must demonstrate the ability to draw correct conclusions consistent with observed physiological signs and symptoms. In addition, the conclusions must be supported by the findings of a forensic toxicology laboratory. **No candidate DRE shall be certified as a drug recognition expert unless blood, urine, or other appropriate biological samples are obtained and submitted from at least nine (9) subjects whom the candidate DRE has examined for certification purposes. These may include subjects for whom the candidate DRE served as the examination recorder or observer as well as those subjects directly evaluated by the candidate DRE. Further, the candidate DRE cannot be certified unless the opinion concerning the drug category or categories affecting the subject is supported by the forensic toxicological analysis seventy-five percent (75%) of the time.** For purposes of this standard, a candidate Dre's opinion is supported if the toxicological analysis discloses the presence of at least one drug category named by the candidate DRE. In the event that the candidate DRE has concluded that three or more categories of drugs are involved, at least two categories must be supported by toxicology results.

Additional Comments

ATTACHMENT

DRUG EVALUATION AND CLASSIFICATION PROGRAM

GLOSSARY OF TERMS

ACCOMODATION REFLEX
The adjustment of the eyes at various distances. Meaning the pupils will automatically constrict as objects move closer.

ADDICTION
The habitual, psychological, and physiological dependence on a substance beyond one's voluntary control.

ADDITIVE EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an additive effect if they both affect the indicator in the same way. For example, cocaine elevates pulse rate and PCP also elevates pulse rate. The combination of cocaine and PCP produces an additive effect on pulse rate.

AFFERENT NERVES
See "Sensory Nerves."

ALKALOID
A chemical that is found in, and can be physically extracted from, some substance. For example, morphine is a natural alkaloid of opium. It does not require a chemical reaction to produce morphine from opium.

ANALGESIC
A drug that relieves or allays pain.

ANALOG (of a drug)
An analog of a drug is a chemical that is very similar to the drug, both in terms of molecular structure and in terms of psychoactive effects. For example, the drug Ketamine is an analog of PCP.

ANESTHETIC
A drug that produces a general or local insensibility to pain and other sensation.

ANTAGONISTIC EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an antagonistic effect if they affect the indicator in opposite ways. For example, heroin constricts pupils while cocaine dilates pupils. The combination of heroin and cocaine produces an antagonistic effect on pupil size. Depending on how much of each drug was taken, and when they were taken, the suspect's pupils could be constricted, dilated or within the normal range of size.

ARRHYTHMIA
An abnormal heart rhythm.

ARTERY
The strong, elastic blood vessel that carries blood away from the heart.

ATAXIA
A blocked ability to coordinate movements. A staggering walk and poor balance may be caused by damage to the brain or spinal cord. This can be the result of trauma, birth defect, infection, tumor or drug use.

AUTONOMIC NERVE
A motor nerve that carries messages to the muscles and organs that we do not consciously control. There are two kinds of autonomic nerves, the sympathetic nerves and parasympathetic nerves.

AXON
The part of a neuron (nerve cell) that sends out a neurotransmitter.

BAC
(Blood Alcohol Concentration) - The percentage of alcohol in a person's blood.

BrAC
(Breath Alcohol Concentration) - The percentage of alcohol in a person's blood as measured by a breath testing device.

BLOOD PRESSURE
The force exerted by blood on the walls of the arteries. Blood pressure changes continuously, as the heart cycles between contraction and expansion.

BRADYCARDIA
Abnormally slow heart rate; pulse rate below the normal range.

BRADYPNEA
Abnormally slow rate of breathing.

BRUXISM
Grinding the teeth. This behavior is often seen in persons who are under the influence of cocaine or other CNS stimulants.

CANNABIS
1. One of the seven drug categories. Cannabis includes marijuana, hashish, hash oil and marinol.

2. Several species of plants from which marijuana and related products are made (e.g. Cannabis Sativa and Cannabis Indicia).

CARBOXY THC
A metabolite of THC (tetrahydrocannabinol).

CHEYNE-STOKES RESPIRATION
Abnormal pattern of breathing. Marked by breathlessness and deep, fast breathing.

CNS (Central Nervous System)
A system within the body consisting of the brain, the brain stem and the spinal cord.

CNS DEPRESSANTS
One of the seven drug categories. CNS depressants include alcohol, barbiturates, anti-anxiety tranquilizers and numerous other drugs.

CNS STIMULANTS
One of the seven drug categories. CNS stimulants include cocaine, the amphetamines, ritalin, preludin and numerous other drugs.

CONJUNCTIVITIS
An inflammation of the mucous membrane that lines the inner surface of the eyelids caused by infection, allergy or outside factors and may be bacterial or viral. Persons suffering from conjunctivitis may show symptoms in one eye only. This condition is commonly referred to as "pink eye", a condition that could be mistaken for the bloodshot eyes produced by alcohol or Cannabis.

CONVERGENCE
The "crossing" of the eyes that occurs when a person is able to focus on a stimulus as it is pushed slowly toward the bridge of his or her nose. (See also "Lack of Convergence".)

CRACK/ROCK

Cocaine base, appears as a hard solid form resembling pebbles or small rocks. It produces a very intense, but relatively short duration "high".

CURRICULUM VITAE
A written summary of a person's education, training, experience, noteworthy achievements and other information about a particular topic.

CYCLIC BEHAVIOR
A manifestation of impairment due to certain drugs, in which the subject alternates between periods (or cycles) of intense agitation and relative calm. Cyclic behavior, for example, sometimes will be observed in persons under the influence of PCP.

DELIRIUM
A brief state characterized by incoherent excitement, confused speech, restlessness and possible hallucinations.

DENDRITE
The part of a neuron (nerve cell) that receives a neurotransmitter.

DIACETYL MORPHINE
The chemical name for Heroin.

DIASTOLIC
The lowest value of blood pressure. The blood pressure reaches its diastolic value when the heart is fully expanded or relaxed (Diastole).

DIPLOPIA
Double vision.

DISSOCIATIVE ANESTHETIC
One of the seven drug categories. Includes drugs that inhibit pain by cutting off or "disassociating" the brain's perception of pain. PCP and it's analogs are considered dissociative anesthetics.

DIVIDED ATTENTION
Concentrating on more than one task at a time. The four psychophysical tests used by DREs require the subject to divide attention.

DOWNSIDE EFFECT
An effect that may occur when the body reacts to the presence of a drug by producing hormones or neurotransmitters to counteract the effects of the drug consumed.

DRUG
Any substance, which when taken into the human body, can impair the ability of

the person to operate a vehicle safely.

DYSPNEA
Shortness of breath.

DYSMETRIA
An abnormal condition that prevents the affected person from properly estimating distances linked to muscular movements.

DYSPHORIA
A mood disorder. Feelings of depression and anguish.

EFFERENT NERVES
See "Motor Nerves".

ENDOCRINE SYSTEM
The network of glands that do not have ducts and other structures. They secrete hormones into the blood stream to affect a number of functions in the body.

EXPERT WITNESS
A person skilled in some art, trade, science or profession, having knowledge of matters not within the knowledge of persons of average education, learning and experience, he/she may assist a jury in arriving at a verdict by expressing an opinion on a state of facts shown by the evidence and based upon his or her special knowledge. (NOTE: Only the court can determine whether a witness is qualified to testify as an expert.)

FLASHBACK
A vivid recollection of a portion of an hallucinogenic experience. Essentially, it is a very intense daydream. There are three types: (1) emotional -- feelings of panic, fear, etc.; (2) somatic -- altered body sensations, tremors, dizziness, etc.; and (3) perceptual -- distortions of vision, hearing, smell, etc.

GARRULITY
Chatter, rambling or pointless speech. Talkative.

HALLUCINATION
A sensory experience of something that does not exist outside the mind, e.g., seeing, hearing, smelling or feeling something that isn't really there. Also, having a distorted sensory perception, so that things appear differently than they are.

HALLUCINOGENS
One of the seven drug categories. Hallucinogens include LSD, MDMA, peyote, psilocybin and numerous other drugs.

HASHISH
A form of Cannabis made from the dried and pressed resin of a marijuana plant.

HASH OIL
Sometimes referred to as "marijuana oil" it is a highly concentrated syrup-like oil extracted from marijuana. It is normally produced by soaking marijuana in a container of solvent, such as acetone or alcohol, for several hours and after the solvent has evaporated, a thick syrup-like oil is produced with a THC content usually 10% to 12%.

HEROIN
A powerful and widely-abused narcotic analgesic that is chemically derived from morphine. The chemical, or generic name of heroin is "diacetyl morphine".

HIPPUS
A rhythmic pulsating of the pupils of the eyes, as they dilate and constrict within fixed limits.

HOMEOSTASIS
The dynamic balance, or steady state, involving levels of salts, water, sugars, and other materials in the body's fluids.

HORIZONTAL GAZE NYSTAGMUS (HGN)
Involuntary jerking of the eyes occurring as the eyes gaze to the side.

HORMONES
Chemicals produced by the body's endocrine system that are carried through the blood stream to the target organ. They exert great influence on the growth and development of the individual, and that aid in the regulation of numerous body processes.

HYDROXY THC
A metabolite of THC (tetrahydrocannabinol).

HYPERFLEXIA
Exaggerated or over extended motions.

HYPERGLYCEMIA
Excess sugar in the blood.

HYPERPNEA
A deep, rapid or labored breathing.

HYPERPYREXIA
Extremely high body temperature.

HYPERREFLEXIA
A neurological condition marked by increased reflex reactions.

HYPERTENSION
Abnormally high blood pressure. Do not confuse this with hypotension.

HYPOGLYCEMIA
An abnormal decrease of blood sugar levels.

HYPOTENSION
Abnormally low blood pressure. Do not confuse this with hypertension.

HYPOTHERMIA
Decreased body temperature.

ICE
A crystalline form of methamphetamine that produces a very intense and fairly long-lasting "high".

INHALANTS
One of the seven drug categories. The inhalants include volatile solvents (such as glue and gasoline), aerosols (such as hair spray and insecticides) and anesthetic gases (such as nitrous oxide).

INSUFFLATION
See "snorting".

INTEGUMENTARY SYSTEM
The skin and accessory structures, hair and nails. Functions include protection, maintenance of body temperature, excretion of waste and sensory perceptions.

INTRAOCULAR
"Within the eyeball".

KOROTKOFF SOUNDS
A series of distinct sounds produced by blood passing through an artery, as the external pressure on the artery drops from the systolic value to the diastolic value.

LACK OF CONVERGENCE
The inability of a person's eyes to converge, or "cross" as the person attempts to focus on a stimulus as it is pushed slowly toward the bridge of his or her nose.

MARIJUANA
Common term for the Cannabis Sativa plant. Usually refers to the dried leaves of the plant. This is the most common form of the cannabis category.

MARINOL
A drug containing a synthetic form of THC (tetrahydrocannabinol). Marinol belongs to the cannabis category of drugs, but it is not produced from any species of cannabis plant.

METABOLISM
The sum of all chemical processes that take place in the body as they relate to the movements of nutrients in the blood after digestion, resulting in growth, energy, release of wastes and other body functions. The process by which the body, using oxygen, enzymes and other internal chemicals, breaks down ingested substances such as food and drugs so they may be consumed and eliminated. Metabolism takes place in two phases. The first step is the constructive phase (anabolism) where smaller molecules are converted to larger molecules. The second step is the destructive phase (catabolism) where large molecules are broken down into smaller molecules.

METABOLITE
A chemical product formed by the reaction of a drug with oxygen and/or other substances in the body.

MIOSIS
Abnormally constricted pupils.

MOTOR NERVES
Nerves that carry messages away from the brain, to the body's muscles, tissues, and organs. Motor nerves are also known as efferent nerves.

MYDRIASIS
Abnormally dilated pupils.

NARCOTIC ANALGESICS
One of the seven drug categories. Narcotic analgesics include opium, the natural alkaloids of opium (such as morphine, codeine, and thebaine), the derivatives of opium (such as heroin, dilaudid, oxycodone, percodan and hycodan), and the synthetic narcotics (such as demerol and numorphan).

NERVE
A cord-like fiber that carries messages either to or from the brain. For drug evaluation and classification purposes, a nerve can be pictured as a series of "wire-like" segments, with small spaces or gaps between the segments.

NEURON
A nerve cell. The basic functional unit of a nerve. It contains a nucleus within a cell body with one or more axons and dendrites.

NEUROTRANSMITTER
Chemicals that pass from the axon of one nerve cell to the dendrite of the next cell,

and that carry messages across the gap between the two nerve cells.

NULL EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce a null effect if neither of them affects that indicator. For example, PCP does not affect pupil size and alcohol does not affect pupil size. The combination of PCP and alcohol produces a null effect on pupil size.

NYSTAGMUS
An involuntary jerking of the eyes.

"ON THE NOD"
A semiconscious state of deep relaxation. Typically induced by impairment due to heroin or other narcotic analgesic. The subject's eyelids droop and chin rests on the chest. Subject may appear to be asleep, but can be easily aroused and will respond to questions.

OVERLAPPING EFFECT
One mechanism of polydrug interaction. For a particular indicator of impairment, two drugs produce an overlapping effect if one of them affects the indicator but the other doesn't. For example, cocaine dilates pupils while alcohol doesn't affect pupil size. The combination of cocaine and alcohol produces an overlapping effect on pupil size: the combination will cause the pupils to dilate.

PALLOR
An abnormal paleness or lack of color in the skin.

PARANOIA
Mental disorder characterized by delusions and the projection of personal conflicts, that are ascribed to the supposed hostility of others.

PARAPHERNALIA
Drug paraphernalia are the various kinds of tools and other equipment used to store, transport or ingest a drug. Hypodermic needles, small pipes, bent spoons, etc. are examples of drug paraphernalia. The singular form of the word is "paraphernalium". For example, one hypodermic needle would be called a "drug paraphernalium".

PARASYMPATHETIC NERVE
An autonomic nerve that commands the body to relax and to carry out tranquil activities. The brain uses parasympathetic nerves to send "at ease" commands to the muscles, tissues and organs.

PARASYMPATHOMIMETIC DRUGS
Drugs that mimic neurotransmitters associated with the parasympathetic nerves. These drugs artificially cause the transmission of messages that produce lower blood pressure, drowsiness, etc.

PDR (Physician's Desk Reference)
A basic reference source for drug recognition experts. The PDR provides detailed information on the physical appearance and psychoactive effects of licitly-manufactured drugs.

PHENCYCLIDINE
A contraction of PHENYL CYCLOHEXYL PIPERIDINE, or PCP. Formerly used as a surgical anesthetic, however, it has no current legitimate medical use for humans.

PHENYL CYCLOHEXYL PIPERIDINE (PCP)
Often called "phencyclidine" or "PCP", it is a specific drug belonging to the Dissociative Anesthetics category.

PHYSIOLOGY
The study of living organisms and the changes that occur during activity.

PILOERECTION
Literally "hair standing up" or goose bumps. This condition of the skin is often observed in persons who are under the influence of LSD.

POLYDRUG USE
Ingesting drugs from two or more drug categories.

PSYCHEDELIC
A mental state characterized by a profound sense of intensified or altered sensory perception sometimes accompanied by hallucinations.

PSYCHOPHYSICAL TESTS
Methods of investigating the mental (psycho-) and physical characteristics of a person suspected of alcohol or drug impairment. Most psychophysical tests employ the concept of divided attention to assess a subject's impairment.

PSYCHOTOGENETIC
Literally "creating psychosis" or "giving birth to insanity". A drug is considered to be psychotogenetic if persons who are under the influence of the drug become insane and remain so after the drug wears off.

PSYCHOTOMIMETIC
Literally "mimicking psychosis" or "impersonating insanity". A drug is considered to be psychotomimetic if persons who are under the influence of the drug look and act insane while they are under the influence.

PTOSIS
Droopy eyelids.

PULSE
The expansion and relaxation of the walls of an artery, caused by the surging flow of blood.

PULSE RATE
The number of expansions of an artery per minute.

REBOUND DILATION
A period of constriction followed by dilation with a change equal to or greater than 2 mm.

RESTING NYSTAGMUS
Jerking of the eyes as they look straight ahead.

SCLERA
A dense white fibrous membrane that, with the cornea, forms the external covering of the eyeball (i.e.the white part of the eye).

SENSORY NERVES
Nerves that carry messages to the brain from the various parts of the body, including notably the sense organs (eyes, ears, etc.). Sensory nerves are also known as afferent nerves.

SINSEMILLA
The unpollenated female cannabis plant, having a relatively high concentration of THC.

SFST
Standardized Field Sobriety Testing. There are three SFSTs, namely Horizontal Gaze Nystagmus (HGN), Walk and Turn and One Leg Stand. Based on a series of controlled laboratory studies, scientifically validated clues of alcohol impairment have been identified for each of these three tests. They are the only Standardized Field Sobriety Tests for which validated clues have been identified.

SNORTING
One method of ingesting certain drugs. Snorting requires that the drug be in powder form. The user rapidly draws the drug up into the nostril, usually via a paper or glass tube. Snorting is also known as insufflation.

SPHYGMOMANOMETER
A medical device used to measure blood pressure. It consists of an arm or leg cuff with an air bag attached to a tube and a bulb for pumping air into the bag, and a gauge for showing the amount of air pressure being pressed against the artery.

STETHOSCOPE
A medical instrument used for drug evaluation and classification purposes in order

to listen to the sounds produced by blood passing through an artery.

SYMPATHETIC NERVE
An autonomic nerve that commands the body to react in response to excitement, stress, fear, etc. The brain uses sympathetic nerves to send "wake up calls" and "fire alarms" to the muscles, tissues and organs.

SYMPATHOMIMETIC DRUGS
Drugs that mimic the neurotransmitter associated with the sympathetic nerves. These drugs artificially cause the transmission of messages that produce elevated blood pressure, dilated pupils, etc.

SYNAPSE (or Synaptic Gap)
The gap or space between two neurons (nerve cells).

SYNESTHESIA
A sensory perception disorder, in which an input via one sense is perceived by the brain as an input via another sense. An example of this would be a person "hearing" a phone ring and "seeing" the sound as a flash of light. Synesthesia sometimes occurs with persons under the influence of hallucinogens.

SYSTOLIC
The highest value of blood pressure. The blood pressure reaches its systolic value when the heart is fully contracted (systole), and blood is sent surging into the arteries.

TACHYCARDIA
Abnormally rapid heart rate; pulse rate above the normal range.

TACHYPNEA
Abnormally rapid rate of breathing.

THC (Tetrahydrocannabinol)
The principal psychoactive ingredient in drugs belonging to the cannabis category.

TOLERANCE
An adjustment of the drug user's body and brain to the repeated presence of the drug. As tolerance develops, the user will experience diminishing psychoactive effects from the same dose of the drug. As a result, the user typically will steadily increase the dose he or she takes, in an effort to achieve the same psychoactive effect.

TRACKS
Scar tissue usually produced by repeated injection of drugs, via hypodermic needle, along a segment of a vein.

VERTICAL GAZE NYSTAGMUS
An involuntary jerking of the eyes (up and down) which occurs as the eyes are held

at maximum elevation.

VOIR DIRE

A french expression literally meaning "to see, to say". Loosely, this would be rendered in English as "to seek the truth", or "to call it as you see it". In a law or court context, one application of voir dire is to question a witness to assess his or her qualifications to be considered as an expert in a matter pending before the court.

VOLUNTARY NERVE

A motor nerve that carries messages to a muscle that we consciously control.

WITHDRAWAL

This occurs in someone who is physically addicted to a drug when he or she is deprived of the drug. If the craving is sufficiently intense, the person may become extremely agitated and even physically ill.

Preliminary Training for Drug Evaluation and Classification Program

Goal

To prepare the students to participate successfully in the 7-Day Drug Recognition Expert School

Objectives

- Define the word "drug" as DREs use the term, and name the seven categories of drugs
- Identify the twelve components, or steps, used in the DEC drug influence evaluation to diagnose a drug impaired subject
- Administer and interpret the psychophysical (or "divided attention") tests used by DREs during the drug influence evaluation

Objectives

- Check and measure a subject's vital signs
- List the major signs and symptoms of impairment for each drug category
- Conduct the eye examinations that are part of the drug influence evaluation
- Describe the history and physiology of alcohol as a drug

DRE Working Definition of "Drug"

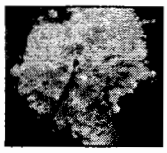
"Any substance, which when taken into the human body, can impair the ability of the person to operate a vehicle safely."

Central Nervous System Depressants

- Barbiturates
- Alcohol
- Valium
- Chloral hydrate

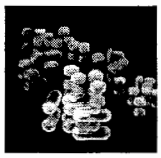
Central Nervous System Stimulants

- Cocaine
- Amphetamines
- Methamphetamine



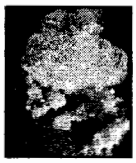
Hallucinogens

- LSD
- Peyote
- Ecstasy



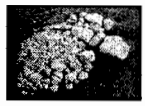
Dissociative Anesthetics

- Phencyclidine (PCP)
- Ketamine
- Dextromethorphan (DXM)



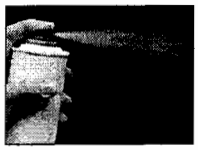
Narcotic Analgesics

- Heroin
- Morphine
- Codeine



Inhalants

- Paint
- Glue
- Nitrous Oxide

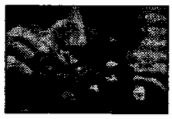


Cannabis

- Marijuana
- Hashish

Frequency of Drug Use

Estimates vary widely, however we do know that:



- **Marijuana is the most used illegal drug with about 14.6 million users**
- **In 2004, 19.1 million Americans aged 12 years or older were current illicit drug users**
- **Approximately 6 million people were users of psychotherapeutic drugs taken non-medically (2004)**

Source: National Survey on Drug Use and Health (NSDUH, 2004)

Questions?

Sixty Minutes

SESSION II

OVERVIEW OF DRUG EVALUATION AND CLASSIFICATION PROCEDURES

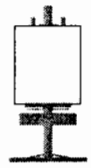
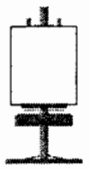
SESSION II OVERVIEW OF DRUG EVALUATION AND CLASSIFICATION PROCEDURES

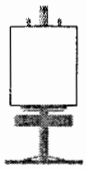
Upon successfully completing this session the student will be able to:

- Identify the twelve major components of the DRE drug influence evaluation.
- Discuss the purposes of each component.

CONTENT SEGMENTS		LEARNING ACTIVITIES	
A.	Components of the Process	o	Instructor-Led Presentations
B.	Video/DVD Demonstrations	o	Video/DVD Presentations

Aides	Lesson Plan	Instructor Notes
 **60 Minutes**  **II-1** (Title)	**OVERVIEW OF DRUG EVALUATION AND CLASSIFICATION PROCEDURES**	Display Session Title
 **II-2** (Objectives)		Briefly review the objectives, content and activities of this session.
 **35 Minutes**	**A. Components of the Process** 1. The Drug Evaluation and Classification process is a standardized and systematic method of examining a subject to determine: a. Whether the subject is under the influence of a drug or combination of drugs. b. If the impairment is resulting from an injury, illness, or drug related. c. The category (or categories) of drugs that is (or are) the likely cause of the subject's impairment.	

Aides	Lesson Plan	Instructor Notes
	2. The process is <u>systematic</u> in that it is based on a careful assessment of a variety of observable signs and symptoms that are known to be reliable indicators of drug impairment.	<u>Write</u> on dry erase board or flip-chart: "A SYSTEMATIC PROCESS"
	a. Some of these observable signs and symptoms relate to the subject's <u>appearance</u>.	<u>Write</u> "appearance" on dry erase board or flip-chart.
	b. Some of the signs and symptoms relate to the subject's <u>behavior</u>.	<u>Write</u> "behavior" on dry erase board or flip-chart.
	c. Some relate to the subject's performance of carefully - administered <u>psychophysical tests</u>. o Drugs impair the subject's ability to control his or her mind and body. o Psychophysical tests can disclose that the subject's ability to control mind and body is impaired. o The specific manner in which the subject performs the psycho-physical tests may indicate the <u>type</u> of impairment from which the subject is suffering. In turn, this may indicate the category or categories of drugs causing the impairment.	<u>Write</u> "psychophysical testing" on dry erase board or flip-chart. <u>Ask</u> students: "What does 'psychophysical' mean?" <u>Point out</u> that "psycho-physical" relates to the subject's <u>mind</u> (psyche) and <u>body</u> (physique).

Aides	Lesson Plan	Instructor Notes
	d. Some of the observable signs and symptoms relate to <u>automatic responses</u> of the subject's body to the specific drugs that are present. e. <u>All</u> of these reliable indicators are examined and carefully considered before a judgment is made concerning what categories of drugs are affecting the subject.	<u>Write</u> "automatic responses of the body" on the dry erase board or flip-chart.
 **II-3** (Standard-ized and Systematic)	3. The process is <u>standardized</u> in that it is administered the same way, to every subject, by every drug recognition expert. a. Standardization helps to ensure that no mistakes are made. o No examinations are left out. o No extraneous or unreliable "indicators" are included. b. Standardization helps to promote professionalism among drug recognition experts. c. Standardization helps to secure acceptance in court.	<u>Ask</u> students: "Why is it so important to perform the drug evaluation and classification examination in exactly the same way, every time?" Probe to draw out all major reasons for standardization.

Aides	Lesson Plan	Instructor Notes
 **II-4** (DRE Report Face Sheet)	4. The Drug Evaluation and Classification process has <u>twelve</u> components or steps.	
 **II-5** (Breath Alcohol Test)	a. <u>Breath Alcohol Test</u> to determine Blood Alcohol Concentration (BAC). o The purpose of the breath test is to determine whether the specific drug, alcohol, may be contributing to the impairment observable in the subject. o Obtaining an accurate measurement of BAC enables the DRE to assess whether alcohol may be the sole cause of the observable impairment, or whether it is likely that some other drug or drugs, or other complicating factors are contributing to the impairment.	<u>Remind</u> students that many subjects who are under the influence of drugs other than alcohol <u>also</u> have alcohol in their bodies.
 **II-6** (Interview of ... Officer)	b. <u>Interview of the Arresting Officer</u>. o In most cases, the subjects you will examine will <u>not</u> be people that <u>you</u> arrested. o The arresting officer may have seen or heard things that would be valuable indicators of	

Aides	Lesson Plan	Instructor Notes
	the kinds of drugs the subject has ingested. o The arresting officer, in searching the subject, may have uncovered drug-related paraphernalia, or even drugs themselves. o The arresting officer also may be able to alert you to important information about the subject's behavior that could be very valuable for your own safety.	
 **II-7** (Prelim. Exam)	c. <u>Preliminary Examination</u>. o The preliminary examination is your first opportunity to observe the subject closely and directly. o A major purpose of the preliminary examination is to determine if the subject may be suffering from an injury or some other medical condition not necessarily related to drugs. o Another major purpose of the preliminary examination is to begin systematically assessing the subject's appearance, behavior and automatic bodily responses for signs of drug-induced impairment.	<u>Point out</u> that the preliminary examination begins the "hands on" with the subject. Use of protective gloves is imperative. <u>Analogy</u>: The preliminary examination is a "fork in the road." It can help you decide whether to continue with the drug examination, or to pursue a possible medical complication, or to proceed with a DWI (alcohol) case. <u>Emphasize</u> that the term "preliminary" does <u>not</u> imply "unimportant". Very valuable evidence often comes to light during the preliminary examination.

Aides	Lesson Plan	Instructor Notes
	o The preliminary examination consists of a series of questions dealing with possible injuries or medical problems; observations of the subject's face, speech and breath; initial checks of the subject's eyes; and, an initial examination of the subject's pulse. o The initial examination of the eyes may reveal signs of injury or illness. A difference in pupil size of greater that 0.5 mm may indicate an injury or existing medical condition.	Emphasize that courts generally accept these questions as not being in conflict with the subject's Miranda rights. However, the students must comply with their own departments' policies as to whether they should advise subjects of their Miranda rights before asking these questions.
 **II-8** (Eye Examinations)	d. Examinations of the Eyes. o Certain drugs produce very easily observable effects on the eyes. - One of the most dramatic of these effects is nystagmus, which means an involuntary jerking of the eyes. - Persons under the influence of alcohol usually will exhibit Horizontal Gaze Nys-tagmus, which is an involuntary jerking of the eyes as the eyes turn toward the side. - Alcohol is not the	Ask students: "What do we look for, in a subject's eyes, to determine if he or she may be under the influence of alcohol?" Probe, as necessary, to draw out the response "nystagmus".

Aides	Lesson Plan	Instructor Notes
	only drug that causes nystagmus. - Horizontal Gaze Nystagmus is not the only observable effect on the eyes that will be produced by various drugs.	 Point out that the examinations of the eyes will be covered in much greater depth subsequently.
 **II-9 (Divided Attention Tests)**	e. Divided Attention Psycho-physical tests. o All drugs that impair driving ability will also impair the subject's ability to perform certain carefully-designed divided attention tests. o These tests are familiar to you in the context of examining alcohol-impaired subjects.	Ask students: "What does 'divided attention' mean?" Probe, as necessary, to draw out responses indicating the concept of "concentrating on more than one thing or task at a time".
	o The same tests are very valuable for disclosing evidence of impairment due to drugs other than alcohol.	Point out that students will have opportunities to practice administering these tests subsequently in the course.
II-10 (Vital Signs Exams)	f. Examinations of Vital Signs. o Many categories of drugs affect the operation of the heart, lungs and other major organs of the body. o These effects show up during examination of	

Aides	Lesson Plan	Instructor Notes
	the subject's vital signs.	
	o The vital signs that are reliable indicators of drug influence include blood pressure, pulse, and temperature.	Point out that examinations of vital signs will be covered in depth subsequently, and that students will have ample opportunity to practice measuring vital signs.
 **II-11 (Dark Room Exams)**	g. Dark Room Examinations	
	o Many categories of drugs affect how the pupils of the eyes will appear, and how they respond to light.	
	o Certain kinds of drugs will cause the pupils to widen dramatically, or dilate.	
	o Some other drugs cause the pupils to narrow, or constrict tightly.	
	o By systematically changing the amount of light entering the subject's eyes, we can observe the pupils' appearance and reaction under controlled conditions.	
	o We carry out these examinations in a dark room, using a penlight to control the amount of illumination entering the subject's eyes.	Exhibit a penlight.

Aides	Lesson Plan	Instructor Notes
	o We use a device called a <u>pupillometer</u> to estimate the size of the subject's pupils.	Exhibit a pupillometer. <u>Point out</u> that the pupillo-meter has a series of circles or semi-circles of various sizes. By lining the circles or semi-circles up alongside the subject's pupil, the pupil's size can be determined. <u>Select</u> a student to step forward and demonstrate the measurement of the student's pupils. <u>Shine</u> the penlight directly into the student's eye, and again demonstrate the measurement of the pupils. <u>Demonstrate</u> that the two eyes "work together"; i.e., shine the penlight into one eye, and demonstrate that the pupil of the other eye also contracts.
	o Other examinations are also conducted in the darkroom, using the penlight: i.e., examination of the nasal area and mouth for signs of drug use and for concealed contraband.	<u>Demonstrate</u> the examination of the student's nasal area and oral cavity. Excuse the student and thank him or her for participating. <u>Point out</u> that students will have several opportunities to practice conducting dark room examinations subsequently in the course.
 **II-12 (Muscle Tone)**	h. Examination for <u>Muscle Tone</u>. o Certain categories of drugs can cause the user's muscles to become markedly tense,	

Aides	Lesson Plan	Instructor Notes
	and rigid. o Evidence of muscle tone may come to light when the subject attempts to perform the divided attention test. o Evidence of muscle tone can also be observed when taking the subject's pulse and blood pressure.	Point out that examination for muscle tone will be covered in greater depth subsequently in the course.
 **II-13 (Exam for Injection Sites)**	i. Examination for Injection Sites. o Certain drugs are commonly injected by their users, via hypodermic needles. o Heroin is probably most commonly associated with injection, but several other types of drugs also are injected by many users. o Uncovering injection sites on a subject provides powerful evidence that he or she may be under the influence of specific types of drugs.	Ask students: "What drug is most often associated with injection via hypodermic needle?"
 **II-14 (Statements and Other Observations)**	j. Suspect's statements and other observations. o At this point in the examination, the trained DRE should have reasonable grounds to believe that the subject is under the	

Aides	Lesson Plan	Instructor Notes
	influence of a drug or drugs.	
	o The DRE should also have at least an articulable suspicion as to the category or categories of drugs causing the impairment.	Point out that though the interview of the subject is the formal process of soliciting information about the subjects drug usage, any voluntary statements previously made during the evaluation should be noted and recorded.
	o The DRE should proceed to interview the subject to confirm his or her suspicion/opinions concerning the drug or drugs involved.	Emphasize that any such interview can proceed only in conformance with formal admonition and strict observance of the subject's Constitutional rights.
	o The DRE must carefully record the subject's statements, and any other observations that may constitute relevant evidence of drug-induced impairment.	Point out that the appropriate procedures for interviewing subjects vary with the probable category or categories of drugs involved.
 **II-15 (Opinion of Evaluator)**	k. Opinion of the Evaluator	
	o Based on all of the evidence and observations gleaned from the preceding ten steps, the DRE must reach an informed conclusion as to:	
	- whether the subject is under the influence of a drug or drugs	
	- if so, the probable category or categories of drugs	

Aides	Lesson Plan	Instructor Notes
	causing the impairment o The DRE must record a narrative summary of the facts forming the basis for his or her conclusions.	
 **II-16 (Toxicological Examination)**	1. <u>Toxicological Examination</u> o The toxicological examination is a chemical test or tests designed to obtain scientific, admissible evidence to substantiate the DRE's conclusions. o Departmental policy and procedures must be carefully and completely followed in requesting, obtaining and handling the chemical sample.	Solicit students' comments and questions concerning this preview of the Drug Evaluation and Classification procedures.
 **II-17 (Drug Influence Evaluation Checklist)**	m. Review of Drug Influence Checklist	Instruct students to turn to the Drug Influence Evaluation Checklist in Section II of their Student Manual.
 **25 Minutes**	**B. Video Demonstrations** Show the video of excerpts from the Drug Recognition Demonstration. (NOTE: This is the 25-minute video segment that is shown in Session V of the 7-day DRE School.) Solicit students' questions about the video demonstrations.	

International Association of Chiefs of Police

Drug Evaluation and Classification Program

Drug Influence Report Checklist

_____ **1. Breath Alcohol Test**

_____ **2. Interview of Arresting Officer**
(Note: Gloves must be worn from this point on.)

_____ **3. Preliminary Examination and First Pulse**

_____ **4. Eye Examinations**

_____ **5. Divided Attention Tests:**

- _____ **Romberg Balance**
- _____ **Walk and Turn**
- _____ **One Leg Stand**
- _____ **Finger to Nose**

_____ **6. Vital Signs and Second Pulse**

_____ **7. Dark Room Examinations and Ingestion Examination**

_____ **8. Check for Muscle Tone**

_____ **9. Check for Injection Sites and Third Pulse**

_____ **10. Interrogation, Statements, and Other Observations**

_____ **11. Opinion of Evaluator**

_____ **12. Toxicological Examination**

REVIEW QUESTIONS

1. Study the drug influence evaluation checklist that appears on the preceding page , then put it aside, and list the twelve components of the drug influence evaluation in the sequence in which they are performed.

   1. Breath Test 2. Interview with arresting officer 3. Preliminary examination 4. Eye examinations 5. Divided Attention tests 6. Vital Sign examinations 7. Dark Room 8. Muscle Tone Examination 9. Injection Sites 10. Suspect interview 11. DRE Opinion 12. Toxicology Examination

2. Name the four divided attention psychophysical tests used to assess a subject's impairment.

   1. Romberg Test 2. Walk and Turn 3. One Leg Stand 4. Finger to Nose

3. When is the first measurement of a subject's pulse rate taken?

   Preliminary Examination

4. Name the two medical instruments that are needed to measure a subject's blood pressure.

   Sphygmomanometer and stethoscope

5. What is the name of the device used to estimate the size of the subject's pupils?

   Pupillometer

6. Which categories of drugs usually cause nystagmus? Which usually cause Lack of Convergence?

   CNS Depressants, Inhalants, Dissociative Anesthetics
   CNS Depressants, Inhalants, Dissociative Anesthetics, Cannabis

7. Which categories usually elevate the pulse rate? Which usually lower the pulse rate?

   CNS Stimulants, Hallucinogens, Dissociative Anesthetics, Inhalants, Cannabis, CNS Depressants, Narcotic Analgesics

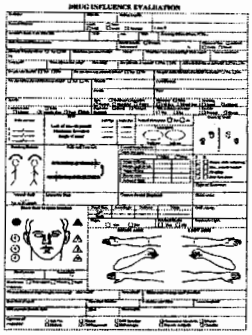
Session II - Overview of the Drug Evaluation and Classification Procedures

Objectives

- Identify the twelve major components of the DRE drug influence evaluation
- Discuss the purposes of each component

The Drug Influence Evaluation

A Standardized and Systematic Process



Step 1

Breath Alcohol Test

Step 2

Interview of the Arresting Officer

Step 3

Preliminary Examination

Drug Influence Evaluation

Preliminary Training For Drug Evaluation and Classification II-7

Step 4

Examination of the Eyes

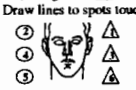
HGN Lack of Smooth Pursuit	Right Eye	Left Eye	Vertical Gaze Nystagmus? ☐ Yes ☐ No
Max. Deviation			Convergence
Angle of Onset			Right Eye / Left Eye

Preliminary Training For Drug Evaluation and Classification II-8

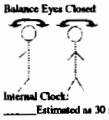
Step 5

Divided Attention Tests

○ Right △ Left
Draw lines to spots touched

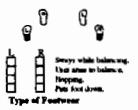


Balance Eyes Closed



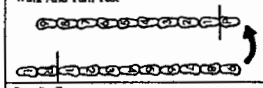
Internal Clock:
_____Estimated as 30 sec.

One Leg Stand:



Type of Footwear

Walk And Turn Test



Cannot keep balance_____
Starts too soon _____

	1st Nine	2nd Nine
Stops Walking		
Misses Heel-Toe		
Steps Off Line		
Raises Arms		
Actual Steps Taken		

Describe Turn | Cannot Do Test (explain)

Preliminary Training For Drug Evaluation and Classification II-9

Step 6

Examination of Vital Signs

Pulse & Time

1. _____/_____
2. _____/_____
3. _____/_____

Blood Pressure **Temp**

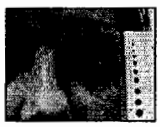
_____/_____ _____ °

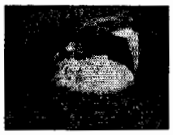
Preliminary Training For Drug Evaluation and Classification II-10

Step 7

Darkroom Examinations

PUPIL SIZE	Room Light	Darkness	Direct	NASAL AREA
Left Eye				ORAL CAVITY
Right Eye				
HIPPUS ☐ Yes ☐ No	REBOUND DILATION ☐ Yes ☐ No		Reaction to Light	





Preliminary Training For Drug Evaluation and Classification II-11

Step 8

Examination for Muscle Tone

MUSCLE TONE:
☐ Near Normal ☐ Flaccid ☐ Rigid

Comments:

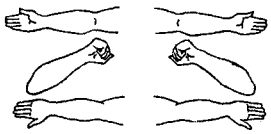
Preliminary Training For Drug Evaluation and Classification II-12

Step 9

Examination for Injection Sites

RIGHT ARM

LEFT ARM



ATTACH PHOTOS OF FRESH PUNCTURE MARKS

Step 10

Suspect's Statements and Other Observations

What medicine or drug have you been using? How much?	Time of use?	Where were the drugs used? (Location)	
Date/Time of Arrest	Time DRE Notified	Eval. Start Time	Time Completed
Member Signature (Include Rank)	ID No.	Reviewed By	
Opinion of Evaluator: ☐ Rule Out ☐ Medical	☐ Alcohol ☐ Depressant	☐ Stimulant ☐ Hallucinogen	☐ D/A ☐ Narcotic Analgesic ☐ Inhalant ☐ Cannabis

Step 11

Opinion of the Evaluator

Step 12

Toxicological Examination

Drug Influence Report Checklist

1. Breath alcohol test
2. Interview of arresting officer (Note: Gloves must be worm from this point on)
3. Preliminary examination and first pulse
4. Eye Examinations
5. Divided attention tests:
   - Romberg balance
   - Walk and turn
   - One leg stand
   - Finger to nose
6. Vital signs and second pulse
7. Dark room examinations and ingestion examination
8. Check for muscle tone
9. Check for injection sites and third pulse
10. Interrogation, statements and other observations
11. Opinion of evaluator
12. Toxicological examination

Questions?

Ninety Minutes

SESSION III

THE PSYCHOPHYSICAL TESTS

SESSION III THE PSYCHOPHYSICAL TESTS

Upon successfully completing this session the student will be able to:

- Administer the four divided attention tests used in the drug influence evaluation process.
- Document the subject's performance of those tests.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Romberg Balance	o Instructor-Led Presentations
B. Walk and Turn	o Student-Led Demonstrations
C. One Leg Stand	o Hands-on Practice
D. Finger to Nose	

Aides	Lesson Plan	Instructor Notes
90 Minutes	**THE PSYCHOPHYSICAL TESTS** Four divided attention psychological tests are administered in the DRE evaluation - Romberg Balance, Walk and Turn, One Leg Stand and Finger to Nose.	Display Session Title
III-1 (Title)	The Walk and Turn and One Leg Stand as well as HGN have been scientifically validated by conducting controlled research to demonstrate their reliability. The Romberg Balance and Finger to Nose have not been subjected to that sort of scrutiny, however, if properly administered and recorded they are very credible evidence of impairment.	Point out that throughout the evaluation process the evaluator must be cognizant of officer safety issues. Officer survival procedures should be observed as appropriate during the administration of the DRE drug influence evaluation.
III-2 (Objectives)		
25 Minutes	**A. Romberg Balance**	
	1. The Romberg Balance is the first divided attention test that is administered during the drug evaluation.	Write "Romberg Balance" on dry erase board or flip-chart.
III-3 (Romberg Test)	a. The test requires the subject to stand with the feet together and the head titled back slightly and with the eyes closed.	Demonstrate the stance required of the subject.
	b. The test also requires that the subject attempt to estimate the passage of thirty seconds; the subject must be instructed to open the eyes and tilt the head forward and say "stop" when they think thirty seconds has elapsed.	Emphasize that the DRE must not instruct the subject as to how they are supposed to estimate the passage of 30 seconds.

Aides	Lesson Plan	Instructor Notes
	c. The DRE must record how much time actually elapsed from the start of the test until the subject opened the eyes. d. If the subject continues to keep the eyes closed for 90 seconds, the DRE should stop the test and record the fact that it was terminated at 90 seconds.	Point out that some drugs tend to "speed up" the subject's internal clock, so that the subject may open the eyes after only 10 or 15 seconds have gone by. Other drugs may "slow down" the internal clock, so that the subject keeps the eyes closed for 60 or more seconds. And, sometimes the drugs confuse the subject to the point where they won't remember to open the eyes until instructed to do so by the DRE.
	2. Administrative procedures and instructions. Verbal instructions should be given as follows: a. "Stand with your feet together, arms at your sides". b. "Watch me and listen while I give you the instructions for this test; don't start doing the test until I tell you to start"."Do you understand?" c. "When I tell you to start, I want you to tilt your head back slightly (demonstrate) and close your eyes." d. "Once you have closed your eyes I want you to remain in that position until you think that 30 seconds have gone by".	Two instructors should demonstrate the administrative procedures for Romberg Balance. One instructor will play the role of the DRE, the other the "suspect". Ask the subject if he/she understands the instructions thus far. If the subject fails to maintain the starting position during your instructions, discontinue the instructions and direct the subject back to the starting position before continuing. Point out that the DRE should not close their eyes while demonstrating this test for safety reasons. Emphasize this to the students.

Aides	Lesson Plan	Instructor Notes
	e. "As soon as you think 30 seconds have passed by, open your eyes and tilt your head forward and say 'stop'". "Do you understand the instructios?"	Ask the subject if he/she understands the instructions.
	f. When the subject opens their eyes ask them "How much time was that?".	Emphasize that the DRE must look at a watch as soon as the subject starts the test, and must record the actual amount of time that passes by until the subject opens his or her eyes.
	3. Instructor-led demonstrations.	One instructor should administer a complete Romberg Balance test to another instructor.
	a. Instructor-to-instructor demonstrations.	Solicit students' questions.
	b. Instructor-to-student demonstration.	Select a student to participate in the demonstration.
		The instructor should administer a complete Romberg Balance test to the student.
		Thank the student for his or her participation and solicit questions.
	4. Student-led demonstrations.	Select two students to conduct demonstrations.
		Have the first student administer the test to the second.
		Offer constructive criticism, as appropriate, about the student-administrator's demonstration.

Aides	Lesson Plan	Instructor Notes
		Have the second student administer the test to the first, and offer appropriate constructive criticism. Thank the students for their participation and solicit questions.
	5. Recording results of the Romberg Balance test. a. The major items that need to be recorded for the Romberg Balance test are: o the amount that the subject sways o the actual amount of time that the subject keeps the eyes closed.	Instruct students to turn to the "Romberg Test Diagram" in their Student Manuals (the same diagram that appears on Visual III-3).
	b. To record swaying, the DRE must estimate how many inches the subject sways, either front-to-back or left-to-right, or both. c. To record the subject's time estimate, simply write the number of seconds that the subject kept his or her eyes closed.	Example: if the subject sways approximately two inches toward the left and approximately two inches toward the right, the DRE should write the number "2" on each side of the "stick figure" that shows left-to-right movement. Solicit students' questions.
	6. Hands-on practice.	Assign students to work in pairs. Instruct teammates to practice administering the Romberg Balance test to each other. Monitor the practice and offer coaching and constructive criticism, as appropriate.

Aides	Lesson Plan	Instructor Notes
 **20 Minutes** 	**B. Walk and Turn** 1. Walk and Turn is the second divided attention test administered during the drug influence evaluation. 2. The test is administered the same way that we have used it for Standardized Field Sobriety Testing purposes. 3. Review of Walk and Turn administrative procedures. a. The test has two stages: the instructions stage and the walking stage. b. During the instructions stage the subject must stand heel-to-toe, with the right foot ahead of the left foot, and keeping the arms at the sides. c. The subject must be told to take nine heel-to-toe steps up the line, to turn, and to return nine heel-to-toe steps down the line. d. You must demonstrate several heel-to-toe steps, and you must demonstrate the turn. e. The subject must be told to watch his or her feet while walking, and to count the steps out loud.	Write "Walk and Turn" on dry erase board or flip-chart. It is suggested a visible line be placed on the floor for use during the demonstration. Demonstrate the stance that the subject must maintain during the instructions stage. If the subject fails to maintain the starting position during your instructions, discontinue the instructions and direct the subject back to the starting position before continuing. Demonstrate how the steps are to taken and demonstrate the turn. Emphasis that the DRE should not turn his/her back to the subject for safety reasons. If the subject stops or fails to count out loud or watch his/her feet, remind him/her to perform these tasks. This interruption will not effect the

Aides	Lesson Plan	Instructor Notes
	f. The subject must be told to keep the arms at the sides at all times.	validity of the test and is essential for evaluating divided attention.
	g. The subject must be told not to stop walking until the test is completed.	
	4. Demonstrations of Walk and Turn.	Select a student to serve as the "suspect".
	a. Instructor-to-student demonstration.	Instructor should administer a complete Walk and Turn test. Thank the student for his or her participation and solicit questions about test administrative procedures.
	b. Student-to-student demonstration.	Select two students to conduct a demonstration. Have one student administer a complete Walk and Turn test to the other. Offer appropriate comments and constructive criticism about the test administration. Thank the students for their participation and solicit questions.
		
III-4 (Walk and Turn Test Diagram)	5. Recording results of the Walk and Turn test.	Instruct students to turn to the "Walk and Turn Test Diagram" in their Student Manuals (the same diagram that appears on Visual III-4).
	a. We record the very same clues on this test that we use for Standardized Field Sobriety Testing purposes.	Ask students: "What are the two clues that we might observe during the instructions stage of the Walk and

Aides	Lesson Plan	Instructor Notes
		Turn test?"
	b. Instructions stage clues: o Failure to maintain balance (feet break away from the heel-to-toe stance) o Starting to walk too soon.	
	c. Walking stage clues: o Stops walking o Misses Heel-To-Toe o Steps off line o Raises arms o Wrong number of steps o Turns improperly	Ask students: "What are the six clues that we might observe during the walking stage?"
	d. During the walking stage clues will be marked in the following manner: o On the lines indicate the number of times the clue occurred. Draw a slash mark at an angle in the direction the step was taken.	
	e. During the walking stage clues will be marked in the following manner: o Indicate by a check the number of times the subject stops, misses heel to toe, steps off line, or raises arms. o Record the actual number of steps taken.	

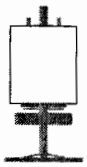
Aides	Lesson Plan	Instructor Notes
	o If the subject stops walking a slash mark should cross between the feet and labeled with an "S".	The "S" indicates "stopped"
	o If the subject steps of the line, indicate with a half of a slash mark at an angle in the direction the step was taken.	
	o If the subject misses heel to toe, indicate with a slash mark between the feet and label with an "M".	The "M" indicates "missed"
	6. Hands-on practice.	Assign students to work in pairs. Instruct teammates to take turns administering the Walk and Turn test to each other. Note: It is not necessary that the teammate playing the role of the "suspect" actually carry out the walking stage of the test. The idea is to take turns practicing the proper way to give instructions for the test. Monitor the practice and offer coaching and constructive criticism, as appropriate.
 20 Minutes	**C. One Leg Stand** 1. One Leg Stand is the third divided attention test	Write "One Leg Stand" on the dry erase board or flip-chart.

Aides	Lesson Plan	Instructor Notes
	administered during the drug influence evaluation.	
	2. For drug evaluation purposes, One Leg Stand is given twice to the subject.	Write "given twice" on dry erase board or flip-chart.
	a. First, the subject is required to perform the One Leg Stand while standing on the left foot.	Note: The One Leg Stand is administered twice to test both the left and right legs to assist the DRE in making comparisons and identify potential medical conditions that may be present..
	b. Next, they are required to perform the test while standing on the right foot.	
	3. Otherwise, One Leg Stand is used in the same fashion as in Standardized Field Sobriety Testing.	
	4. Review of One Leg Stand administrative procedures.	Two instructors should be used for this demonstration, one as the "suspect" and the other as the examiner.
	a. The test has two stages, the instructions stage and the balance and counting stage.	
	b. During the instructions stage the subject must stand with the feet together, arms at the side, facing the examiner.	Demonstrate the stance that the "suspect" is required to maintain.
	c. The subject must be told that they will have to stand on the left foot, and raise the right foot approximately 6 inches off the ground, with the right leg held straight and the raised foot parallel to the ground.	The examiner must demonstrate the one-leg stance. Emphasize that the subject must maintain the foot elevation throughout the test.
		If the subject lowers his/her

Aides	Lesson Plan	Instructor Notes
		foot, he/she should be instructed to raise it.
	d. The subject must be told that they must look at the elevated foot during the test.	Emphasize that the examiner should not look at his or her own foot while giving the instructions; for safety reasons, the examiner must keep the eyes on the subject at all times.
	e. The subject must be told that they will have to count out loud in the following manner: "one thousand-and one, one thousand-and two, one thousand-and-three" and so on until told to stop".	After giving the instructions, the examiner should ask the "suspect" if they understand. Solicit students' questions about the administrative procedures for One Leg Stand. <u>Point out</u> that the validation of the One Leg Stand was based on a thirty-second time period. Therefore, the DRE must keep track of the actual time the subject stands on each foot. When thirty seconds have passed, stop the test.
	f. After the subject has completed the test on the left foot, they must be told to repeat the test on the right foot.	Point out that the DRE should explain the instructions again prior to having the "suspect" perform the test on the right foot.
 **III-5** (One Leg Stand Test Diagram)	5. Recording results of the One Leg Stand.	Instruct students to turn to the "One Leg Stand Test Diagram" in their Student Manuals (the same diagram that appears on Visual III-5).

Aides	Lesson Plan	Instructor Notes
	a. For drug evaluation purposes, we use the same clues on the One Leg Stand that we use for Standardized Field Sobriety Testing. b. The One Leg Stand clues: o Sways while balancing o Uses arms to balance o Hopping o Puts foot down c. Indicate above the feet the number they were counting when they put their foot down. d. Check marks should be made to indicate the number of times the subject swayed, used arms for balance, hopped or put their foot down. **e.** The subjects actual count during the 30 seconds should be documented in the top area of the box above the foot on which the subject was standing. 6. Hands-on practice.	Ask students: "What are the four clues of the One Leg Stand test?" Solicit questions about documenting the results of the One Leg Stand. Assign students to work in pairs. Instruct teammates to take turns administering the One Leg Stand to each other. Note: It is not necessary that the student serving as the "suspect" actually stand on one foot for thirty seconds. The idea is to practice giving the instructions for the test.

Aides	Lesson Plan	Instructor Notes
		Monitor the practice and offer appropriate coaching and constructive criticism.
	**D. Finger to Nose.**	
25 Minutes 	1. The Finger to Nose is the final divided attention test used in the drug influence evaluation.	Write "Finger to Nose" on dry erase board or flip-chart.
	2. Finger to Nose differs from the other three tests in that the examiner must continue to give instructions to the subject throughout the test.	
	3. Administrative procedures for Finger to Nose.	Two instructors should serve in this demonstration, one as the examiner and the other as "suspect".
	a. The subject must be told to stand with feet together, arms down at the sides, facing the examiner.	The examiner should demonstrate the stance.
	b. The subject must be told to close his/her hands, rotate the palms forward and then to extend the index fingers from the closed hands.	Demonstrate the proper extension of the index fingers.
	c. The examiner must tell subject that they will be asked to touch the tip of the index finger to the tip of the nose.	
	d. The examiner must demonstrate to the subject how they are expected to touch the fingertip to the nose.	Demonstrate the movement of the fingertip to the nose by standing at an angle to the "suspect" so that he/she can see the proper method for touching the nose.

Aides	Lesson Plan	Instructor Notes
	e. The "suspect" must be told that he/she will be given a series of commands, i.e., "left, right, etc." to indicate which fingertip is to be brought to the tip of the nose.	Demonstrate: "When I say 'right', touch the tip of your right index finger to the tip of your nose."
	f. The examiner must tell the subject that they are expected to return the arm to the side immediately after touching the fingertip to the nose.	
	g. The "suspect" must be told to tilt the head back slightly and to close the eyes, and keep them closed until the examiner says to open them.	Note: the subject's head should be tilted back in the same fashion as in the Romberg Balance test. The examiner should demonstrate the stance with head tilted back, arms at the sides with index fingers extended. Remind the students that they should not close their eyes during the instructions for safety reasons.
	h. The test is always given in the following sequence of commands: o left o right o left o right o right o left	Write the sequence on dry erase board or flip-chart. Solicit students' questions concerning administrative procedures for Finger to Nose.
	4. Instructor-led demonstrations. a. Instructor-to-instructor demonstration.	One instructor should give a complete demonstration of Finger to Nose, using another instructor as the "suspect".

Aides	Lesson Plan	Instructor Notes
	b. Instructor-to-student demonstration.	Select a student to serve as the "suspect" and administer a complete Finger to Nose test to that student. Thank the student for his/her participation and solicit questions about the demonstrations.
	5. Student-led demonstrations.	Select two students and have them take turns administering Finger to Nose to each other. Offer appropriate comments and constructive criticisms about the students' administration of the test. Thank the students for their participation and solicit questions from the class.
 **III-6** (Finger to Nose Test Diagram)	6. Recording results of the Finger to Nose test. a. The results of Finger to Nose test are recorded by drawing a "map" showing where the fingertips landed on each attempt. b. A line should be drawn to the appropriate triangle to indicate where the subject touched their nose.	Instruct students to turn to the "Finger to Nose Test Diagram" in their Student Manuals (the same diagram that appears on Visual III-4). Suggestion: If the DRE draws the line from the place where the subject touches to the triangle it enables them to draw a straighter line. Solicit questions about recording the results of Finger to Nose.

Aides	Lesson Plan	Instructor Notes
	7. Hands-on practice.	Assign students to work in pairs. Instruct teammates to take turns administering Finger to Nose to each other. Note: It is not necessary for the teammate who is the "suspect" to carry out the test completely. Monitor the practice and offer appropriate coaching and constructive criticism.

REVIEW QUESTIONS

1. List the four divided attention test in the sequence in which they are administered in the drug influence evaluation.

   1. Romberg 2. Walk and Turn 3. One Leg Stand 4. Finger to Nose

2. On which foot must the subject stand the first time he or she performs the One Leg Stand?

   Left

3. How much time must the subject estimate during the Romberg Balance?

   30 seconds

4. List all of the scientifically validated clues of impairment for Walk and Turn.

   1. Loses Balance During Instructions 2. Starts too soon 3. Stops while walking 4. Steps off line 5. Wrong number of steps 6. Does not touch heel to toe 7. Raises arms for balance 8. Incorrect turn

5. List all of the scientifically validated clues of impairment for Finger to Nose.

   None

6. What sequence of finger commands must you give for the Finger to Nose?

   Left, Right, Left, Right, Right, Left

7. List all of the scientifically validated clues of impairment for Romberg Balance.

   None

8. List all of the scientifically validated clues of impairment for One Leg Stand.

   1. Raises arms for balance 2. Puts foot down 3. Hops 4. Sways while balancing

Session III - Psychophysical Tests

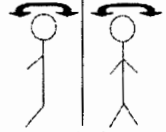
Objectives

- Administer the four divided attention tests used in the drug influence evaluation process
- Document the subject's performance of those tests

Romberg Balance Test Diagram

Romberg Balance

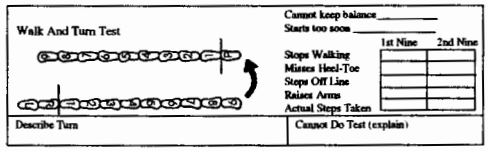
Approx. | Approx.



Internal Clock:

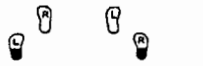
_____Estimated as 30 sec.

Walk and Turn Test Diagram



One Leg Stand Test Diagram

One Leg Stand:



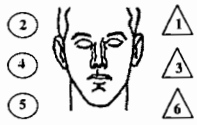
L	R	
☐	☐	Sways while balancing.
☐	☐	Uses arms to balance.
☐	☐	Hopping.
☐	☐	Puts foot down.

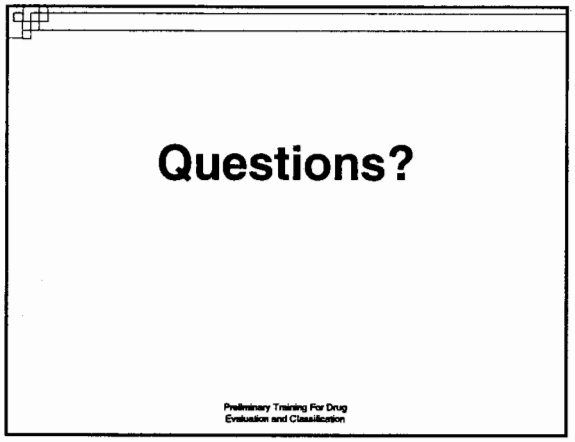
Type of Footwear

Finger to Nose Test Diagram

◯ Right Left △

Draw lines to spots touched




Questions?
Preliminary Training For Drug
Evaluation and Classification

Ninety Minutes

SESSION IV

THE EYE EXAMINATIONS

SESSION IV THE EYE EXAMINATIONS

Upon successfully completing this session the student will be able to:

- Administer tests of Horizontal Gaze Nystagmus, Vertical Gaze Nystagmus and Lack of Convergence.
- Estimate pupil size.
- Relate the expected results of the eye examinations to the seven categories of drugs.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Purposes of the Eye Examinations	o Instructor-Led Presentations
B. Procedures and Clues	o Instructor-Led Demonstrations
C. Demonstrations	o Hands-on Practice
D. Relationship of Drug Categories to the Eye Examinations	

Aides	Lesson Plan	Instructor Notes
 **90 Minutes**	**THE EYE EXAMINATIONS**	Display Session Title
 **IV-1** (Title)		
 **IV-2** (Objectives)		Briefly review the content, objectives and activities of this session.
15 Minutes 	**A. Purposes of the Eye Examinations** 1. The principal purpose of all of the eye examinations is to obtain articulable facts indicating the presence or absence of specific categories of drugs.	
 **IV-3** (Eye Exams)		
	a. Certain drug categories usually cause the eyes to react in specific ways. b. Other drug categories usually do not cause those reactions.	

Aides	Lesson Plan	Instructor Notes
	2. The tests of Horizontal Gaze Nystagmus (HGN) and Vertical Gaze Nystagmus (VGN) provide important indicators of the drug categories that may or may not be present.	
	a. If HGN is observed, it is likely that the subject may have taken a CNS Depressant, PCP or it's analog, an Inhalant, or a combination of those.	
	b. If VGN is observed, the implication may be that the subject took PCP (or an analog), or fairly large doses of depressants or inhalants (for that individual).	Point out that it is very unlikely that a subject would exhibit Vertical Gaze Nystagmus without also exhibiting HGN.
	c. By comparing the subject's blood alcohol concentration with the angle of onset of HGN, it may be possible to determine that alcohol is or is not the sole cause of the observed nystagmus.	Clarification: If the angle of onset is significantly inconsistent with the BAC, the implication may be that the subject has also taken PCP or an Inhalant, or some CNS Depressant other than alcohol, or that the subject may have a medical condition.
	d. The consistency of onset angle and BAC can be compared using the following formula: BAC = 50 - A	Write the formula on the dry erase board or flip-chart. Explanation: BAC = 100 x blood alcohol (e.g., if blood alcohol is 0.10, BAC = 10) A = onset angle (in degrees) Example: If onset angle is 35 degrees, then BAC = 50 - 35 = 15.

Aides	Lesson Plan	Instructor Notes
		The corresponding blood alcohol concentration would be approximately 0.15.
	e. Keep in mind that this formula is only a statistical approximation. It is <u>not</u> an exact relationship for all subjects at all times.	<u>Emphasize this point</u>: The formula can easily be "off" by 0.05 or more, even though the subject has consumed no drug other than alcohol.
	f. The only purpose of comparing BAC and the angle of onset is to obtain a gross indication of the possible presence of another Depressant, Inhalants, or PCP.	<u>Emphasize</u> that many other facts will also be considered that will help to determine whether Depressants, Inhalants or PCP may be present.
	g. A DRE is expected to be able to estimate the angle of onset of nystagmus to the nearest 5 degree increment, over the range from 30 to 45 degrees. o If the subject's eyes begin to jerk before they have moved to the 30 degree mark, you will not attempt to estimate the angle precisely, but will record they exhibit "immediate onset". o From 30 degrees on out, you will record a numeric estimate of onset.	
	3. The check for <u>Lack of Convergence</u> can provide another clue as to the possible presence of Depressants, Inhalants, or PCP.	

Aides	Lesson Plan	Instructor Notes
	4. Lack of Convergence is also an indicator of the possible presence of Cannabis.	Point out that a DRE might begin to suspect the presence of cannabis if Lack of Convergence was observed but no HGN was observed.
	5. The checks of pupil size and reaction to light provide useful indicators of the possible presence of many drug categories.	Point out that in addition to signs of drug use, checks of the pupil size and reaction to light may reveal signs of injury or existing medical conditions.
	a. Depressants, CNS Stimulants, Inhalants and Narcotic Analgesics will usually cause the pupils to react very slowly or not at all to light.	
	b. CNS Stimulants and Hallucinogens usually will cause the pupils to dilate.	
	c. Narcotic Analgesics will usually cause the pupils to constrict.	Solicit students' comments and questions concerning the purposes of the eye examinations.
	**B. Procedures and Clues**	
50 Minutes	1. Prior to the administration of the HGN test, the eyes are checked for equal tracking, resting nystagmus, and equal pupil size.	NOTE: If the eyes do not track together, or if the pupils are noticeably unequal in size, the chance of a medical disorder or injuries causing the nystagmus may be present. Resting Nystagmus may also be observed at this time.
 **IV-4** (HGN Clues)	2. Horizontal Gaze Nystagmus test consists of three separate checks, administered independently to each eye.	Remind the students that the HGN test is done exactly the same as in the SFST training and that the DRE start with the "suspects" left eye first.

Aides	Lesson Plan	Instructor Notes
 **IV-4A** (Lack of Smooth Pursuit)	a. The first check is for "lack of smooth pursuit". o Position the stimulus approximately 12 to 15 inches in front of subject's nose.	Select a student, and demonstrate the first check of HGN on that student.
	o Hold the tip of the stimulus slightly above the subject's eye level. o Instruct the subject to hold the head still and follow the stimulus with the eyes only.	Point out that this procedure insures that the eyes will be open wide and easy to observe.
	o Move the stimulus smoothly, all the way to the subject's left, then all the way to the right, then back again all the way to the left, then once again all the way back to the right.	Point out that we begin by checking the subject's left eye, then we immediately check the right eye. And, we make at least two complete passes in front of both eyes. Demonstrate two complete passes in front of the eyes, using the student-volunteer as your test subject. Emphasize: For standardization, we always begin by checking the left eye. Point out that the stimulus should moved at a speed that requires approximately two seconds to bring it from the center to side.

Aides	Lesson Plan	Instructor Notes
	b. While the eye is moving, examine it for evidence of a lack of smooth pursuit.	Use these or similar analogies: (1) A smoothly pursuing eye will move without friction, much the way that a windshield wiper glides across the windshield when it is raining steadily. An eye showing lack of smooth pursuit will move in a fashion similar to a wiper moving across a dry windshield. (2) A smoothly pursuing eye will roll in the socket the way that a marble or ball bearing would glide smoothly across a polished pane of glass. An eye exhibiting lack of smooth pursuit would move more like that marble rolling over a sheet of heavy gauge sandpaper. Excuse the student-volunteer and thank him/her for participating.
	c. Students' initial practice of the check for lack of smooth pursuit.	Instruct students to work in pairs, taking turns checking each other's eyes for lack of smooth pursuit. Monitor, coach and critique the students' practice. Allow this practice to continue for only about 2 minutes.

Aides	Lesson Plan	Instructor Notes
 **IV-4B** (Distinct...At Maximum)	d. The second check is for "distinct <u>and sustained</u> nystagmus at maximum deviation". o Again position the stimulus as before. o Move the stimulus all the way to the subject's left side and hold it there so that the subject's eye is turned as far to the side as possible. o Hold the eye at that position for a minimum of 4 seconds, to check carefully for any jerking that may be present. o Then, move the stimulus all the way to the subject's right side, and hold it there for a minimum of 4 seconds. e. With this cue, the examiner looks for <u>distinct and sustained</u> jerking. o A slight or barely visible tremor is not sufficient to consider this cue present. o A definite, strong jerking must be seen.	<u>Select</u> a student and demonstrate the second check of HGN on that student. <u>Note:</u> Remind students that the nystagmus must be both <u>distinct and sustained</u>. <u>Remind</u> students that we always start by checking the subject's left eye. <u>Remind</u> students that, as soon as we have finished checking the left eye, we immediately repeat the check on the right. <u>Point out</u> that for HGN to be considered present, a distinct and sustained jerking must be present for a minimum of four seconds.

Aides	Lesson Plan	Instructor Notes
		Excuse the student-volunteer and thank him/her for participating.
	f. Students' initial practice of the check for distinct and sustained nystagmus at maximum deviation.	Instruct students to work in pairs, taking turns checking each other's eyes for distinct and sustained nystagmus at maximum deviation. Monitor, coach and critique the students' practice. Allow this practice to continue for only about 2 minutes.
 **IV-4C** (Angle of Onset)	g. The final check is for the "angle of onset". The formula is BAC = 50 - A.	
	o Position the stimulus as before.	Select a student and demonstrate the third check of HGN on that student.
	o Slowly move the stimulus to the subject's left side, carefully watching the eye for the first sign of jerking.	
	o When you think that you see the eye jerk, stop moving the stimulus and hold it perfectly still.	
	o Verify that the eye is, in fact, jerking.	Point out that, if the eye is not jerking, it will be necessary to resume moving the stimulus slowly to the side, again observing for the first sign of jerking.
	o Once you have established that you have located the point of on-	Exhibit a template if available.

Aides	Lesson Plan	Instructor Notes
	set, estimate the angle. o Then, repeat this procedure on the subject's right eye.	 Point out that angle estimation simply requires practice. Point out that the template will be used during practice. Excuse the student-volunteer and thank him or her for participating.
	h. Students' initial practice of angle of onset estimation.	Instruct students to work in pairs, taking turns estimating angles of each other's eyes. Instruct students that they are to try to draw their partners' eyes to 3 different angles: 30°; 35°; 40° Students will check their accuracy using the template. Monitor, coach and critique the students' practice. Allow this practice to continue for only about 3 minutes. INSTRUCTOR PLEASE NOTE: In their previous training in HGN, some students may have been taught to look for all 3 clues in one eye, and then to check the other eye for all 3 clues. There is nothing wrong with that procedure, from either a scientific or legal perspective. As DREs however, we expect them to switch from eye to eye as they "work through" the three clues. There are two

Aides	Lesson Plan	Instructor Notes
		reasons for this: (1) Standardization: we want all DREs to work in the same way; the "left eye/right eye" switching procedure is simply the standard approach that we have adopted. (2) Medical Complications: DREs must always be alert to the possibility of a medical complication, such as a stroke, brain tumor or other injury to the brain. These kinds of injuries often will cause the two eyes to behave quite differently from one another. For example, the left eye might jerk noticeably while the right eye tracks smoothly. By always immediately comparing the performances of the two eyes, the DRE might more quickly spot the possibility of a medical complication. NOTE: NHTSA modified its SFST training courses to conform to this "left/right" procedure in 1989.
 **IV-5** (Vertical Gaze Nystagmus)	2. The Vertical Gaze Nystagmus test is very simple, and consists of a single check. a. Position the stimulus horizontally, approximately 12 to 15 inches in front of	Select a student and demonstrate the Vertical Gaze Nystagmus test on the student.

Aides	Lesson Plan	Instructor Notes
	the subject's nose.	
	b. Instruct the subject to hold the head still and follow a specific point on the stimulus with the eyes only.	
	c. Raise the stimulus until the subject's eyes are elevated as far as possible.	
	d. Watch closely for evidence of jerking.	Point out that the examiner should keep the subject's eyes elevated for approx. 4 seconds to verify that the jerking is present and continues during the full four seconds. Point out that we do not attempt to estimate an angle of onset for Vertical Gaze Nystagmus: We simply record whether a visible up-and-down jerking is present or not present. Excuse the student-volunteer and thank him or her for participating.
	e. Students' initial practice of the Vertical Gaze Nystagmus test.	Instruct students to work in pairs, taking turns administering the Vertical Gaze Nystagmus test to each other. Monitor, coach and critique the students' practice.
		Allow this practice to continue for only about 2 minutes.
IV-6 (LOC)	3. The test for Lack of Convergence determines whether the subject is able to	Select a student and demonstrate the test for Lack of Convergence on that student.

Aides	Lesson Plan	Instructor Notes
	cross his or her eyes.	
	a. Position the stimulus approximately 12 to 15 inches in front of the subject's nose in the same position we use for the HGN test.	Point out in simplest terms, Lack of Convergence means an inability to cross the eyes.
 **IV-7** (LOC Procedures)	b. Inform the subject that you are going to move the stimulus around in a circle in front of his/her face and to follow the stimulus with his/her eyes only.	Point out that the stimulus can be moved either clockwise or counterclockwise.
	c. Inform the subject that you will move the tip of the stimulus in toward the bridge of his or her nose.	Emphasize that it is important that the subject be aware of what will happen so that he or she will not flinch or become frightened when you move the stimulus toward his or her face.
	d. Point out to the subject that he or she will have to keep their head steady and try to cross the eyes in order to keep the eyes focused on the stimulus as it moves in toward the nose.	Point out that you will not actually touch the subject's nose.
	e. Start to move the object slowly in a circle.	Point out that this initial circular motion helps to verify that the subject has focused on the stimulus and is able to track it.
	f. Verify the subject is tracking the stimulus.	
	g. Move the stimulus to within approximately two inches of the bridge of the nose. Carefully observe the subject's eyes to determine	Point out not to actually touch the nose and not go any closer than approximately two inches from the bridge of the nose.

Aides	Lesson Plan	Instructor Notes
	whether both eyes converge on the stimulus.	
 **IV-8** (Normal Convergence Response)	h. In a normal non-impaired subject, the eyes should come together (converge) and remain converged for one second.	Point out that convergence response in most people is a distance of approximately 2 inches from the bridge of the nose.
	i. If the eyes do not converge or remain converged on the stimulus for one second, then Lack of Convergence is present.	Point out that many normal non-impaired people cannot converge to the bridge of the nose. Moving the stimulus within two inches of the nose provides a better indicator of lack of convergence attributed to drug impairment.
	j. Students' initial practice of the test for Lack of Convergence.	Point out to keep the stimulus high enough so that eye movement can be observed. Excuse the student-volunteer and thank him or her for participating. Instruct students to work in pairs, taking turns testing each other's eyes for Lack of Convergence. Monitor, coach and critique the students' practice. Allow this practice to continue for only about 2 minutes.

Aides	Lesson Plan	Instructor Notes
 **IV-9** (Drugs Causing LOC)	k. Drug categories which usually cause lack of convergence include: • CNS Depressants • Inhalants • Dissociative Anesthetics • Cannabis	Point out that our eyes continually adjust to accommodate different lighting conditions.
 **IV-10** (Estimating Pupil Size)	4. Estimation of pupil size. a. We use a device called a pupillometer to estimate the size of the subject's pupil.	Emphasize the measurement is an "estimate". Select a student and demonstrate pupil size estimation using the student. Exhibit a pupillometer.
	b. The DRE pupillometer has a series of circles or semi-circles, with diameters ranging from 1.0 mm to 10.5 mm, in half-millimeter increments.	
	c. The pupillometer is held alongside the subject's eye, and moved up and down until the circle or semi-circle closest in size to the pupil is located.	
	d. The pupil size estimations are recorded as the numeric value that corresponds to	

Aides	Lesson Plan	Instructor Notes
	the diameter of the circle or semi-circle closest in size to the subject's pupil in each lighting condition.	
	e. Students' initial practice of pupil size estimation.	Select a student from the class and demonstrate how the pupil size is estimated. Upon completion, excuse the student-volunteer and thank him/her for participating. Instruct students to work in pairs, taking turns estimating each other's pupils. Monitor, coach and critique the students' practice. Allow this practice to continue for only about 2 minutes. Tell the students to record on paper the pupil sizes of their partners. Ask the students how many found partners with different-sized pupils (i.e., one pupil larger or smaller than the right). Point out that it is not too uncommon to find people whose pupils differ by as much as one-half millimeter, but the larger differences are more unusual.
		Tabulate the pupil size estimates made by the students, on the flip-chart using the following sizes:

Aides	Lesson Plan	Instructor Notes
		8.5 or larger _____ 8.0 _____ 7.5 _____ 7.0 _____ 6.5 _____ 6.0 _____ 5.5 _____ 5.0 _____ 4.5 _____ 4.0 _____ 3.5 _____ 3.0 _____ 2.5 or smaller_____ <u>Point out</u> that the "normal" range of pupil size in room light is 2.5 to 5.0 mm.
 **IV-11** (Three Lighting Conditions)	f. We estimate pupil size under three (3) different lighting conditions: • Room Light • Near Total Darkness • Direct Light Different testing conditions create different demands on the autonomic nervous system, including the pupil.	<u>Instructor Note:</u> The In-Direct Light estimation was removed from the DRE protocol in 2003 after research determined it had no direct correlation to impairment.
 **IV-12** (Testing Conditions)	g. Examining the pupils in three different lighting conditions is similar to examining other clinical indicators, i.e., pulse or blood pressure in different conditions. 1. Estimation of pupil size under Room Light	<u>Point out</u> that the human pulse and blood pressure can vary depending on whether the person is standing, resting, or running.

Aides	Lesson Plan	Instructor Notes
	a. Pupils are examined in Room Light prior to darkening the room. 2. Estimation of pupil size under Near Total Darkness and Direct Light. a. The final two pupil size estimations are made with the use of a penlight in a near totally darkened room. b. Prior to estimating the pupil sizes, we darken the room and wait 90 seconds to allow the subject's eyes and our own to adapt to the dark. c. For the estimation under near total darkness, completely cover the tip of the penlight with your finger or thumb, so that only a reddish glow and no white emerges. d. Bring the glowing red tip up toward the subject's left eye until you can distinguish the pupil from the colored portion of the eye (iris). e. Position the pupillometer alongside the pupil (left eye first) and locate the circle or	<u>Demonstrate</u> this.

Aides	Lesson Plan	Instructor Notes
	semi-circle that is closest in size to the pupil.	Select a student to participate in demonstrations of darkroom pupil measurements.
	f. Repeat the procedure for the subject's right eye.	
	g. For the estimation under direct light, completely uncover the tip of the penlight, bring the light from the side of the subject's face, directly into the eye and hold it there for 15 seconds.	Demonstrate this. Emphasize that the penlight should be positioned so that the beam just "fits" or approximately fills the eye socket.
	h. Bring the pupillometer up alongside the left eye, and find the circle or semi-circle that is closest in size to the pupil.	
	i. Repeat the procedure for the right eye.	Point out that during this examination the DRE should look closely for Hippus or Rebound Dilation.
	5. Normal sizes for the pupil.	
	a. Since we estimate pupil size under three different lighting conditions; Room Light, Near Total Darkness,	

Aides	Lesson Plan	Instructor Notes
 **IV-13** (Research Values)	and Direct Light, the range of pupil sizes will vary. 6. Basic Concepts Relative to Interpreting Pupil Sizes. a. It is important to understand a few basic concepts relative to interpreting pupil sizes. Understanding these concepts will allow DRE's to better understand the relationship of pupil size to impairment b. Mean Values and Average Ranges: Scientifically validated studies were conducted to determine normative values for pupil size in non-impaired persons. These studies show what one would expect a person to exhibit when their pupil sizes are checked under different lighting conditions. Sometimes average means "in the middle", or sum of all numbers divided by the number in a particular group. What we use for interpretation purposes are "average ranges" of pupil sizes. c. As a DRE, you will be making your decision of impairment based on	<u>Point out</u> that when all of the study subjects were tested, the majority (approximately 88%) of the "normal" non-impaired people fell within the "average ranges."

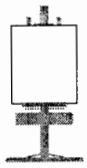
Aides	Lesson Plan	Instructor Notes
	clinical, psychophysical, and behavioral indicators. This includes using pupil sizes as one of the factors in determining that impairment.	
	d. With many people, even under very bright light, the pupils won't constrict much below a diameter of 2.5 mm, and even under near total dark conditions, the pupils usually only dilate to a diameter of not more than 8.5 mm.	
IV-14 (Research)	e. Studies have indicated there are significant differences between the average pupil size in these three conditions. Consequently, the use of three distinct pupil size ranges for each of the different testing conditions may be more useful to determine impairment vs. non-impairment.	Point out: That although there are several studies that indicate these pupil sizes are "for the majority of normal, non-impaired people", there is one study in particular that specifies the average size and ranges: "An Evaluation of Pupil Size Standards Used By Police Officers for Detecting Drug Impairment" JAOA, March 2004, Richman, McAndrew, Decker & Mullaney.
		
IV-15 (Room Light)	1. Room Light is approximately 4.0 mm with an average range of normal sizes ranging from 2.5 to 5.0 mm.	

Aides	Lesson Plan	Instructor Notes
 **IV-16** (Near Total Darkness)	2. Near Total Darkness is approximately 6.5 mm with an average range of normal pupil sizes ranging from 5.0 to 8.5 mm.	
 **IV-17** (Direct Light)	3. Direct Light is approximately 3.0 mm with an average range of normal pupil sizes ranging from 2.0 to 4.5 mm.	
	d. Many drugs, however, will affect the dilation or constriction of the pupils and many cause the pupil size to go outside these normal ranges.	Point out that specific drug categories and their relationship to pupil sizes will be covered later.
	6. The check of the pupil's reaction to light takes place at the same time as the test of pupil size under direct light.	
	a. Observe the subject's pupil size as the penlight is aimed at the side of the subject's face.	Demonstrate this using a student-volunteer.
	b. As you bring the beam of light directly into the subject's eye, note how the pupil reacts.	Demonstrate this.
	c. Under ordinary conditions, the pupil should react very	

Aides	Lesson Plan	Instructor Notes
	quickly, and constrict noticeably when the light beam strikes the eye.	Point out that pupillary reaction to light should occur within one second.
	d. Under the influence of certain categories of drugs, the pupil's reaction may be very sluggish, or there may be no constriction at all.	Excuse the student-volunteer and thank him/her for participating.
	e. Students' initial practice in measuring the pupil's reaction to light.	Instruct the students to work in pairs, taking turns shining the light into each other's eye and observing the pupil's reaction. Remind students to position the penlight so that the beam exactly "fits" the eye socket when the beam is brought directly into the eye. Monitor, coach and critique the students' practice. Allow the practice to continue for only about 2 minutes. Solicit students' comments and questions concerning the eye examinations.
	C. Demonstrations	
 **15 Minutes**	1. Demonstrate equal tracking and equal pupil size.	
	2. Demonstration of Horizontal Gaze Nystagmus.	Select two students to come before the class.

Aides	Lesson Plan	Instructor Notes
	a. Check for lack of smooth pursuit.	Instruct one student to demonstrate the administration of HGN to the other student.
	b. Check for distinct and sustained nystagmus at maximum deviation.	Coach and critique the student-administrator's performance.
		Make sure that the student-administrator checks both eyes.
	c. Estimation of the angle of onset.	When the student-administrator has completed the HGN test, instruct the student-administrator to draw the student-subject's eye to an angle of 35 degrees. Check the accuracy of this estimate, using the template.
		Excuse the two students and thank them for participating.
	2. Demonstration of Vertical Gaze Nystagmus and Lack of Convergence.	Select two other students to come before the class.
		Instruct one student to check the other for Vertical Gaze Nystagmus.
		Coach and critique the student-administrator's performance.
		Instruct the second student to check the eyes of the first student for Lack of Convergence.
		Coach and critique the student-administrator's performance.
		Excuse the two students and thank them for participating.

Aides	Lesson Plan	Instructor Notes
	3. Demonstration of pupil size estimation and test for reaction to light.	Select two other students to come before the class.
	a. Pupil size estimation under room light.	Instruct one student to estimate the other's pupils under room light. Coach and critique the student-administrator's performance.
	b. Darkroom estimations of pupil size. o near total darkness o direct light	Instruct the second student to demonstrate how to perform the dark room estimations of pupil size. Coach and critique the student-administrator's performance. Point out that assessment of the pupil's reaction to light takes place in conjunction with the direct-light estimation. Excuse the two students and thank them for participating.
 **IV-18** (Normal Ranges Recap)	g. To review, the normal ranges for non-impaired people are: Room Light: 4.0 mm with an average range of 2.5 - 5.0 mm. Near Total Darkness: 6.5 mm with an average range of 5.0 - 8.5 mm.	Solicit students' comments and questions concerning the demonstrations of the eye examinations and the pupil size ranges.

Aides	Lesson Plan	Instructor Notes
	Direct Light: 3.0 mm with an average range of 2.0 - 4.5 mm.	
	**D. Relationship of Drug Categories to the Eye Examinations**	Note: Draw the Matrix at the end of this session on the dry erase board or flip-chart at the outset of this segment.
10 Minutes		
	1. Three of the seven drug categories normally will cause Horizontal Gaze Nystagmus.	Ask the students which drug categories normally induce HGN.
	a. CNS Depressants, Inhalants and Dissociative Anesthetics, including PCP and its analogs, normally will cause HGN.	Along the "HGN" line on the matrix, write "PRESENT" under the columns for Depressants, Dissociative Anesthetics and "YES" for Inhalants.
	b. The other four categories normally will not cause HGN.	Write "NONE" on the "HGN" line under the other columns.
	2. Any drug that will cause HGN also will cause Vertical Gaze Nystagmus, if a high enough dose of the drug is taken.	
	a. So, Depressants, Inhalants and Dissociative Anesthetics, including PCP and its analogs, can all cause Vertical Gaze Nystagmus at higher doses for that individual.	Along the "VERT NYST" line, write "PRESENT" under the columns for those three categories.
	b. But if a drug will not cause HGN, then it also will not cause Vertical Gaze Nystagmus.	Write "NONE" for "VERT NYST" under the other four columns.

Aides	Lesson Plan	Instructor Notes
	3. All drugs that cause nystagmus also will cause the eyes to be unable to converge.	
	a. Therefore, Depressants, Inhalants and Dissociative Anesthetics, including PCP and its analogs, usually will cause Lack of Convergence.	Write "PRESENT" along the "LACK CONV" line under the columns for those three categories.
	b. Interestingly, there is one category of drug that does not cause nystagmus but that does usually cause Lack of Convergence.	Ask students which category that is.
	c. Cannabis usually does cause lack of convergence, even though it does not cause nystagmus.	Write "PRESENT" along the "LACK CONV" line under "CANNABIS".
	d. The other three categories do not cause a Lack of Convergence.	Write "NONE" along the line under the remaining three columns.
	4. An interesting and important fact is that the drugs that cause nystagmus usually don't affect pupil size, and the drugs that don't cause nystagmus usually do affect pupil size.	
	a. CNS Stimulants and Hallucinogens usually cause the pupils to become larger or "dilated".	Write "DILATED" along the "PUPIL SIZE" line under the columns for CNS Stimulants and Hallucinogens.
	b. Cannabis may cause the pupils to dilate.	Write "DILATED" under the "CANNABIS" column; however, explain they frequently may also be NORMAL.

Aides	Lesson Plan	Instructor Notes
	c. Narcotic Analgesics usually cause the pupils to become smaller or "constricted".	Write "CONSTRICTED" under the "NARCOTICS" column.
	d. Dissociative Anesthetics and most Inhalants tend to leave pupil size in the normal ranges.	Write "NORMAL" under the columns for Dissociative Anesthetics and Inhalants. BUT POINT OUT THAT SOME INHALANTS WILL CAUSE PUPIL DILATION.
	e. CNS Depressants also usually leave the pupils near normal.	Write "NORMAL" under the "DEPRESSANT" column.
	f. However, there are some exceptions, i.e., depressant drugs that usually <u>dilate</u> the pupils.	Ask students which depressants causes pupil dilation.
	g. Methaqualone, or "Quaaludes" and Soma usually cause pupil dilation.	Put an asterisk (*) next to the "NORMAL" in the "DEPRESSANT" column, and write "*Methaqualone and Soma dilate pupils" under the matrix. Solicit students' questions and comments.
	5. Generally, the pupillary reaction to light is either slowed by the effect of the drug or the pupil reacts normally. The most significant exception is the effect caused by Narcotic Analgesics. Though there is always some reaction to light, in <u>live</u> subjects, the constricted pupil caused by narcotic analgesics makes it difficult to perceive a change in the pupil size.	

Aides	Lesson Plan	Instructor Notes
	a. CNS Depressants and CNS Stimulants usually cause a slowed reaction to light.	Write "SLOW" under the columns for CNS Stimulants and Depressants.
	b. With Hallucinogens, Dissociative Anesthetics and Cannabis the pupillary reaction to light is usually normal.	Write "NORMAL" under the columns for Hallucinogens, Dissociative Anesthetics and Cannabis.
	c. Due to the constricted nature of the pupils when under the influence of Narcotic Analgesics, it is difficult to perceive a reaction to light. As a result we list reaction to light for Narcotic Analgesics as "little or none visible".	Write "LITTLE OR NONE VISIBLE" under Narcotic Analgesics.
	d. Inhalants may cause a slowed reaction or the pupils may react normally depending on the substance used.	Write "SLOW" in the column for inhalants and explain that this is only a general rule.

	DEPRESS	STIMULS	HALLUCS	D/A	NARCOTS	INHALS	CANNABIS
HGN							
VGN							
LACK CONV.							
PUPIL SIZE							
RCTN-LIGHT							

REVIEW QUESTIONS

1. Name the three clues of impairment associated with Horizontal Gaze Nystagmus.

   1. Lack of smooth pursuit 2. Distinct and sustained nystagmus at maximum deviation 3. Onset of nystagmus prior to 45 degrees

2. Complete this formula:

   BAC = 50 - ????
   Angle of onset

3. Which categories of drugs will not cause Vertical Gaze Nystagmus?

   CNS Stimulants, Hallucinogens, Narcotic Analgesics, Cannabis

4. Which categories of drugs usually will cause Lack of Convergence?

   CNS Depressants, Inhalants, Dissociative Anesthetics, Cannabis

5. Name the three lighting conditions under which a DRE makes pupil size estimations.

   Room light, Near total darkness, Direct light

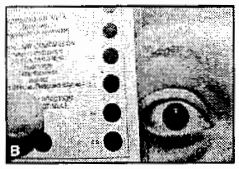
6. What is the normal range of pupil size for room light?

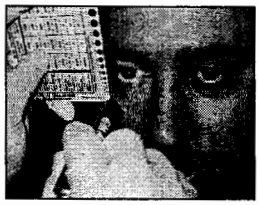
   2.5-5.0 mm

7. Which categories of drugs will usually slow down the reaction of the pupils to light?

   CNS Depressants, CNS Stimulants, Inhalants

Session IV - The Eye Examinations

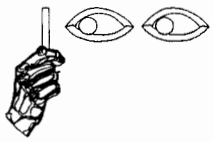




Objectives

- Administer tests of Horizontal Gaze Nystagmus, Vertical Gaze Nystagmus and Lack of Convergence
- Estimate pupil size
- Relate the expected results of the eye examinations to the various categories of drugs

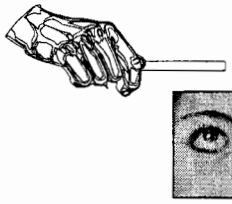
The Eye Examinations



Three Clues of Horizontal Gaze Nystagmus

- Lack of Smooth Pursuit
- Distinct and Sustained Nystagmus at Maximum Deviation
- Angle of Onset

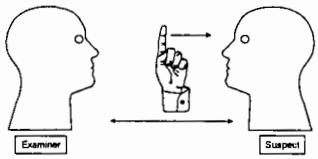
Vertical Gaze Nystagmus



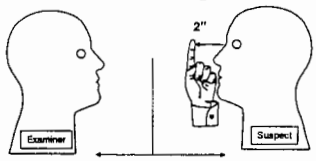
Lack of Convergence

LOC Testing Procedure

- Begin by moving the stimulus in a circle in front of the subject's face
- Observe the eyes to verify that the subject is tracking the stimulus
- Slowly move the stimulus in toward the bridge of the nose



Normal convergence is a distance approximately two inches (2") from the bridge of the nose



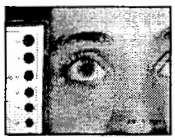
- If the eyes converge (cross) when the stimulus is approximately two inches from the bridge of the nose, the Lack of Convergence is "not present"
- Lack of convergence is present if the subject's eyes do not come together and cross as they track and stay aligned on the stimulus

Drug Categories That Induce LOC

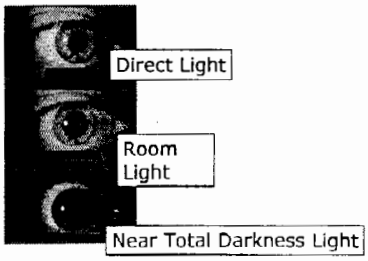
The following drug categories usually will induce Lack of Convergence:

- **CNS Depressants**
- **Inhalants**
- **Dissociative Anesthetics**
- **Cannabis**

Estimating Pupil Size

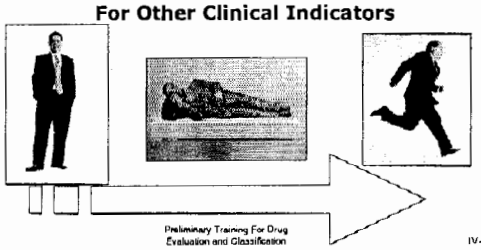


THREE TESTING CONDITIONS FOR PUPIL SIZE ESTIMATIONS



These *THREE TESTING CONDITIONS* create Different Demands on the Autonomic Nervous System including the Pupil

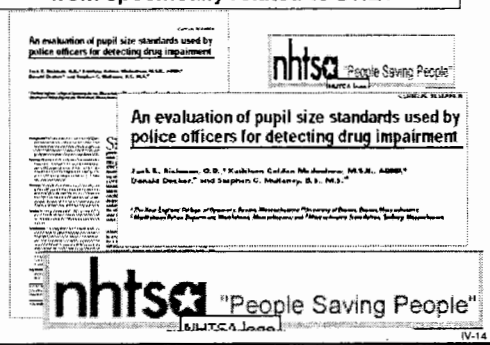
We ALSO know that **.... There are THREE CONDITIONS For Other Clinical Indicators**



Recent Research for Normal Values

- **Mean or Average :**
  - ✓The average value of a given set of findings
- **Average Range: (1.5 Standard Deviation)**
  - ✓The range of data in which 88% or greater of the findings are included

Updated Values – Where did they come from specifically related to DRE?



Room Light	
8.0 mm	0.00%
7.5 mm	0.45%
7.0 mm	1.12%
6.5 mm	1.79%
6.0 mm	0.89%
5.5 mm	3.35%
2.5 mm	5.36%
2.0 mm	0.89%
1.5 mm	0.00%

Room Light is approximately 4.0 mm with an average range of normal pupil sizes ranging from 2.5 to 5.0 mm.

88% of normal fall within the range of 2.5 to 5.0 mm.
In fact, the percentage that falls within 3.5 to 4.5 mm is more than half (61%) of the people.

Near Total Darkness	
10 mm	0.00%
9.5 mm	0.22%
9 mm	4.80%
8.5 mm	6.93%
8 mm	8.43%
7.5 mm	11.00%
7 mm	14.07%
6.5 mm	15.17%
6 mm	15.02%
5.5 mm	8.33%
4.5 mm	4.47%
4 mm	1.79%
3.5 mm	1.00%
3 mm	0.00%

Near Total Darkness is approximately 6.5 mm with an average range of normal pupil sizes ranging from 5.0 to 8.5 mm.

About 88% of normals fall within the range of 5.0 to 8.5 mm.
In fact, the percentage that falls within 6.0 to 7.0 mm is almost 42 percent of the people.

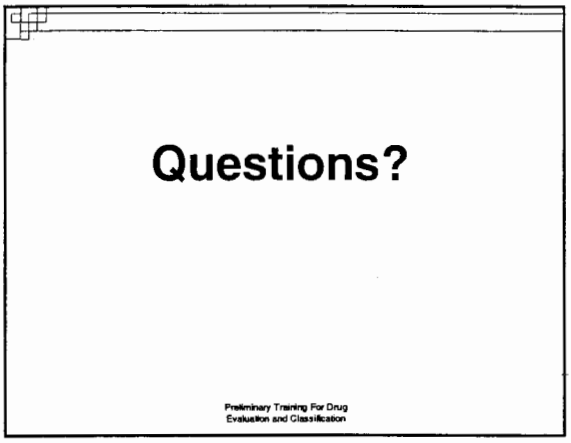
Direct Light	
6 mm	2%
5.5 mm	3%
5 mm	4%
1.5 mm	0%

Direct Light is approximately 3.0 mm with an average range of normal pupil sizes ranging from 2.0 to 4.5 mm

88% of normal fall within the range of 2.0 to 4.5 mm.
In fact, the percentage that falls within 3.0 to 4.0 mm is almost 69 percent of the people.

Normal Pupil Size Ranges Recap

- ✓Room Light: 4.0 mm with average range of 2.5 – 5.0 mm
- ✓Near Total Darkness: 6.5 mm with average range of 5.0 – 8.5 mm
- ✓Direct Light: 3.0 mm with average range of 2.0 – 4.5 mm


Questions?
Preliminary Training For Drug
Evaluation and Classification

Two Hours

SESSION V

ALCOHOL WORKSHOP

SESSION V ALCOHOL WORKSHOP

Upon successfully completing this session the student will be able to:

- Administer the psychophysical tests and the eye examinations to persons who have consumed varying amounts of alcohol.
- Document the results of these tests and examinations.
- Accurately assess the extent of a person's alcohol impairment based on the tests and examinations.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Assignments and Procedures	o Hands-on Practice
B. Testing	o Student-led Presentations
C. Feedback and Discussion	
D. Alcohol Workshop Checklist	

Aides	Lesson Plan	Instructor Notes
 **120 Minutes**	**ALCOHOL WORKSHOP**	Display Session Title
 **V-1** (Title)		Discuss the objectives of the Alcohol Workshop. INSTRUCTOR NOTE: The main emphasis of the alcohol workshop is to evaluate the student's proficiency in the administration of SFSTs.
 **V-2** (Objectives)		
 **15 Minutes**	**A. Assignments and Procedures** 1. Team assignments. a. One member will be an examiner and will complete all portions of the exam. b. One member will be the recorder and document the findings of the examination on the evaluation form. c. All others in the group will observe/coach. d. Each team member will conduct at least one complete examination.	Group the participants into teams. The number of students in each team is determined by dividing the total number of students by the total number of volunteer drinkers. Example: if there are 23 students and 7 volunteer drinkers, form five teams of three members and two teams of four members. (NOTE: All volunteer drinkers must read and sign the "Statement of Informed Consent" form prior to receiving any alcohol.)

Aides	Lesson Plan	Instructor Notes
	2. Explanation of testing procedures. a. Each team will conduct the following sequence of tests and examinations on each volunteer:	Write the sequence of tests and examinations on dry erase board or flip-chart.
 **V-3** (Testing Procedures)	**o** HGN (record angle of onset in each eye) o Vertical Gaze Nystagmus o Lack of Convergence o Romberg Balance o Walk and Turn o One Leg Stand (standing on left leg) o One Leg Stand (standing on right leg) o Finger to Nose	Emphasize that the team will administer each test only <u>once</u> to each volunteer, e.g., only one member of a team will administer the HGN test to a particular volunteer. Emphasize that the tests and examinations are to be given in the order listed for all volunteers.
	b. Teams will record the results of each test and examination.	
	c. Upon completing the test and examinations, the team members will record their best estimate as to the volunteer's BAC.	Solicit questions about the testing procedures. Hand out test recording forms to the teams.

Aides	Lesson Plan	Instructor Notes
 75 Minutes	B. Testing	Monitor the testing to ensure compliance with the procedures. Always allow a team to complete the full sequence of tests and examinations before sending the volunteer to another team. Offer coaching and constructive criticism as appropriate.
 30 Minutes	C. Feedback and Discussion	Transcribe on the board the matrix found at the end of this session to be completed during the discussion phase of the workshop. For each volunteer, select <u>one</u> team to report in detail on each test and examination administered to that volunteer. Call upon students to report their best estimates as to that volunteer's BAC. Inform the students of the results of that volunteer's breath tests. Continue this process until all volunteers have been reported upon. Solicit students' questions and comments.

Drinker's Name	Below .05	.05 - .09	.10 - .14	.15 or Greater

Session V - Alcohol Workshop

Objectives

- Administer the psychophysical tests and the eye examinations to persons who have consumed varying amounts of alcohol
- Document the results of these tests and examinations
- Accurately assess the extent of a person's alcohol impairment based on the tests and examinations

Testing Procedures

- Horizontal Gaze Nystagmus (record onset angle in each eye)
- Vertical Gaze Nystagmus
- Lack of Convergence
- Romberg Balance
- Walk and Turn
- One Leg Stand (on left foot)
- One Leg Stand (on right foot)
- Finger to Nose

Three Hours

SESSION VI

EXAMINATIONS OF VITAL SIGNS

SESSION VI EXAMINATIONS OF VITAL SIGNS

Upon successfully completing this session the student will be able to:

- Define basic terms relevant to pulse rate and blood pressure measurements.
- Measure pulse rate.
- Measure blood pressure.
- Relate the expected results of vital signs examinations to the various categories of drugs.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Purposes of the Examinations	o Instructor-Led Presentations
B. Procedures and Cues	o Instructor-Led Demonstrations
C. Demonstrations	o Hands-on Practice
D. Normal Ranges of Vital Signs	
E. Relationship of Drug Categories to the Vital Signs Examinations	
F. Practice	

Aides	Lesson Plan	Instructor Notes
 **180 Minutes**	**EXAMINATIONS OF VITAL SIGNS**	Display Session Title
 **VI-1** (Title)		
 **VI-2** (Objectives)		Briefly review the content, objectives and activities of this session.
 **5 Minutes**	**A. Purposes of the Examinations** 1. The vital signs that are relevant to the drug evaluation and classification process include: a. Pulse rate b. Blood pressure c. Temperature	Point out these vital signs on the wallchart.
	2. Different types of drugs affect these vital signs in different ways. a. Certain drugs tend to "speed up" the body and elevate these vital signs.	Clarification o pulse may quicken o blood pressure may rise o temperature may rise
	b. Other drugs tend to "slow down" the body and lower these vital signs.	Clarification o pulse may slow o blood pressure may drop

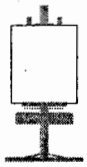
Aides	Lesson Plan	Instructor Notes
		o temperature may fall
	3. Systematic examination of the vital signs gives us much useful information concerning the possible presence or absence of various categories of drugs.	Point out that for purposes of standardization, the pulse and blood pressure readings will be obtained using the left arm if at all possible.
 **75 Minutes**	**B. Procedures and Cues**	
 **VI-3** (Pulse Definitions)	1. Measurement of pulse rate. a. Pulse is the expansion and relaxation of an artery generated by the pumping action of the heart.	
	b. Pulse rate is the number of pulsations in an artery per minute.	Point out that pulse rate is equal to the number of contractions of the heart per minute.
	c. An artery is a strong, elastic blood vessel that carries blood away from the heart .	
	d. A vein is a blood vessel that carries blood back to the heart.	
	e. When the heart contracts, it squeezes blood out of its chambers into the arteries.	
	f. The surging blood causes the arteries to expand.	
	g. By placing your fingers on the skin next to an artery and pressing down, you can	Emphasize: The "surge" can be felt as the blood is squeezed from the heart through an

Aides	Lesson Plan	Instructor Notes
	feel the artery expand as the blood surges through.	artery. The pulse cannot be felt in a vein.
	h. By keeping your fingers on the artery and counting the number of pulses that occur in one minute, you will measure the pulse rate.	Demonstrate this, by holding your fingers on your own radial artery.
	i. Pulse is easy to measure, once you locate an artery close to the surface of the skin.	
VI-4 (Radial Artery)	j. One convenient pulse point involves the radial artery.	
	o The radial artery can be located in or near the natural crease of the wrist, on the side of the wrist next to the thumb.	Point to the radial artery pulse point on your own wrist.
	o Hold your left hand out, with the palm down.	Demonstrate this.
	o Place the tips of your right hand's index finger and middle finger into the crease of your left wrist, and exert a slight pressure.	Demonstrate this.
	o Allow your left hand to curl downward.	Demonstrate this.
	o You should be able to feel the pulse in your radial artery.	Ask students whether they can feel their pulses. Coach any students who have difficulty in locating the pulse.

Aides	Lesson Plan	Instructor Notes
 **VI-5** (Brachial Artery)	k. Another pulse point involves the brachial artery.	Point to the brachial artery pulse point in your own arm.
	o The brachial artery can be located in the crook of the arm, halfway between the center of the arm and the side of the arm closest to the body.	Instruct students to roll up their sleeves, if necessary, to expose their brachial artery pulse points.
	o Hold your left hand out, with the palm up.	Demonstrate this.
	o Place the tips of your right hand's index and middle fingers into the crook of your left arm, close to the body, and exert a slight pressure.	Demonstrate this.
	o You should be able to feel the pulse in your brachial artery.	Ask students whether they can feel their pulses. Coach any students who have difficulty locating the pulse.
	l. Another pulse point involves the carotid artery.	
 **VI-6** (Carotid Artery)	o The carotid artery can be located in the neck, on either side of the Adam's apple.	Point out the carotid artery pulse point on your own neck.
	o Place the tips of your right hand's index and middle fingers alongside the right side of your "Adam's Apple".	Demonstrate this.

Aides	Lesson Plan	Instructor Notes
	o You should be able to feel the pulse in your carotid artery.	Ask students whether they can feel their pulses. Coach any students who have difficulty locating the pulse.
	m. Basic Do's and Don'ts of measuring pulse.	
	o Don't use your thumb to apply pressure while measuring a subject's pulse.	Point out that there is an artery located in the thumb. If you apply pressure with the thumb, you may be actually measuring your own pulse instead of the subject's.
	o If you use the carotid artery pulse point, don't apply pressure to both sides of the Adam's Apple: this can cut off the supply of blood to the brain.	
	o When measuring the pulse rate, use 30 seconds as the standard time interval.	Point out that pulse rate is always expressed as "beats per minute". If you count the beats during an interval of 30 seconds, you must double the result to obtain the pulse rate. The pulse reading should not be an odd number.
	n. Students' initial practice at measuring pulse rate.	Instruct students to work in pairs, taking turns measuring each other's pulse. Tell students to record on paper their partner's pulse rates. Monitor, coach and critique the students' practice.

Aides	Lesson Plan	Instructor Notes
		Allow the practice to continue for only about 5 minutes. Print the following lists on the dry erase board or flip-chart: 50 or less ____ 76-78 ___ 52-54 ___ 80-82 ___ 56-58 ___ 84-86 ___ 60-62 ___ 88-90 ___ 64-66 ___ 92-94 ___ 68-70 ___ 96-98 ___ 72-74 ___100 or more ___ Tabulate the numbers of students whose pulse rates were in each of the listed intervals. Point out that the "normal range" of pulse rate is 60-90 beats per minute.
 **VI-7** (Blood Pressure Definitions)	2. Measurement of blood pressure. a. Blood pressure is the force that the circulating blood exerts on the walls of the arteries. b. Blood pressure changes constantly as the heart contracts and relaxes. c. Blood pressure reaches its maximum as the heart contracts and sends the blood surging through the arteries. This is called the systolic pressure.	

Aides	Lesson Plan	Instructor Notes
	d. Blood pressure reaches its minimum when the heart is fully expanded. This is called the diastolic pressure.	
	e. It is always necessary to measure and record both the systolic and diastolic blood pressure.	Remind students that "systolic" is the higher number, "diastolic" the lower number. Memory aid: Systolic: "S" for "Superior" Diastolic: "D" for "Down"
	f. The device used for measuring blood pressure is called a sphygmomanometer.	Write "SPHYGMOMANOMETER" on the dry erase board or flip-chart. Exhibit a sphygmomanometer.
	g. The sphygmomanometer has a special cuff that can be wrapped around the subject's arm and inflated with air pressure.	Select a student to come before the class. Have the student sit in a chair facing the class, and roll up a sleeve (if necessary) to expose the left bicep. Wrap the cuff around the student-volunteer's arm and inflate it.
	h. As the pressure in the cuff increases, the cuff squeezes tightly on the arm.	Ask the student-volunteer whether they can feel the pressure of the cuff.
	i. When the pressure gets high enough, it will squeeze the artery completely shut.	Ask students: "What artery is located in the crook of the arm?" (Point to that location on the student-volunteer's arm).
	j. Blood will cease flowing through the brachial artery. And, since the brachial artery "feeds" the radial	Release the pressure in the cuff on the student-volunteer's arm.

Aides	Lesson Plan	Instructor Notes
	artery, blood will also cease flowing through the radial artery.	
	k. If we slowly release the air in the cuff, the pressure on the arm and on the artery will start to drop.	
	l. Eventually, the pressure will drop enough so that blood will once again start to flow through the artery.	Ask students: "How far must the pressure in the cuff drop before the blood can start to squeeze through the artery?"
	o Blood will start flowing in the artery once the pressure inside the artery equals the pressure outside the artery.	
	o The two pressures will become equal when the air pressure in the cuff drops down to the systolic pressure.	
	o When that happens, blood will spurt through the artery each time the heart contracts.	
		Ask students: "What would happen if we allowed the pressure in the cuff to drop down to the systolic level, and held the air pressure at that level?"
		Point out that the blood would spurt through the artery each time the heart contracted, but would cease flowing when the heart expanded.

Aides	Lesson Plan	Instructor Notes
		Ask students: "How far down must the air pressure in the cuff drop before the blood will flow through the artery continuously?"
	o Once the air pressure in the cuff drops down to the diastolic level, the blood will flow continuously through the artery.	
	m. Overview of procedures for measuring blood pressure.	
VI-8 (BP Basics)	o Apply enough air pressure to the cuff to cut off the flow of blood through the artery. (Approximately 180 mmHg)	Demonstrate, using the student-volunteer (apply pressure to the cuff). As DREs we usually inflate the cuff until the manometer shows a reading of approximately 180 mmHg.
	o Slowly release the air pressure until the blood just begins to spurt through the artery: that level will be the systolic pressure.	Slowly release the pressure in the cuff. Emphasize that the pressure should drop at approximately 2 mmHg per second. (5 sec for each 10 mm drop)
	o Continue to release the air pressure until the blood flows continuously through the artery: that level will be the diastolic pressure.	
		Ask students: (1) "How can we tell when the blood starts to spurt through the artery?"

Aides	Lesson Plan	Instructor Notes
		(2) "How can we tell when the blood is flowing continuously through the artery?"
	n. We can <u>listen</u> to the spurting blood, using a <u>stethoscope</u>.	<u>Exhibit</u> a stethoscope.
	o Apply the stethoscope to the skin directly above the artery.	<u>Demonstrate</u>, using the student-volunteer.
	o Apply pressure to the cuff, enough to cut off the flow of blood.	<u>Inflate</u> the cuff on the student-volunteer's arm.
	o When no blood is flowing through the artery, we hear <u>nothing</u> through the stethoscope.	
	o Slowly release the air from the cuff, letting the pressure start to drop.	<u>Release</u> the air in the cuff.
	o When we drop to the systolic pressure, we start to hear a <u>spurting</u> sound.	<u>NOTE</u>: This begins as a clear, tapping sound.
	o As we continue to allow the air pressure to drop, the surges of blood become steadily longer.	<u>NOTE</u>: The sounds take on a swishing quality, and become fainter.
	o When we drop to the diastolic pressure, the blood flows steadily and all sounds cease.	Excuse the student-volunteer and thank him or her for participating.
 VI-9 (Korotkoff)	o. The sounds that we listen to are called <u>Korotkoff Sounds</u>.	Named after Dr. Nikolai Korotkoff, a Russian physician who introduced the method of

Aides	Lesson Plan	Instructor Notes
	They are divided into five (5) phases.	determining blood pressure in 1905.
	o Phase 1 - the first appearance of clear, tapping sounds that gradually increase in intensity.	Point out that the beginning of Phase 1 corresponds to the systolic pressure.
	o Phase 2 - the sounds change to a murmur and take on a swishing quality.	
	o Phase 3 - the sounds develop a loud, knocking quality (not quite as clear as the Phase 1 sounds).	
	o Phase 4 - the sounds suddenly become muffled and again have a faint swishing quality.	
	o Phase 5 - the sounds cease.	Point out that the beginning of Phase 5 corresponds to the diastolic pressure.
 **VI-10** (Sphygmo-manometer)	p. Familiarization with the sphygmomanometer.	Hand out stethoscopes and sphygmomanometers (one per each student is desirable. At a minimum, there should be one for every four students).
	o The compression cuff contains an inflatable rubber bladder.	Point out the components of the sphygmomanometer on Visual VI-10.
	o A tube connects the bladder to the manometer, or pressure gauge.	Clarification: The manometer displays the air pressure inside the bladder.

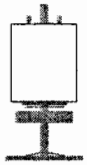
Aides	Lesson Plan	Instructor Notes
	o Another tube connects the bladder to the pressure bulb, which can be squeezed to inflate the bladder.	
	o The pressure control valve permits inflation of the bladder and regulates the rate at which the bladder is deflated.	
	- To inflate the bladder, the pressure control valve must be twisted all the way to the right.	Demonstrate this.
	- When the valve is twisted all the way to the right, air can be pumped into the bladder, but no air can escape from the bladder.	
	- To deflate the bladder, twist the valve to the left.	
	- The more the valve is twisted to the left, the faster the bladder will deflate.	
VI-11 (Details of BP)	q. Details of blood pressure measurement.	
	o Position the cuff on the bicep so that the tubes extend down the middle of the arm.	Select a student to serve as a blood pressure subject. Demonstrate the procedures using the student.

Aides	Lesson Plan	Instructor Notes
	o Wrap the cuff snugly around the bicep.	
	o Clip the manometer (pressure gauge) on the subject's sleeve, so that it is readily viewable.	
	o Twist the pressure control valve all the way to the right.	
	o Put the stethoscope earpieces in your ears.	Make sure the earpieces are turned forward, i.e., toward the nose.
	o Place the diaphragm or bell of the stethoscope over the brachial artery.	
	o Rapidly inflate the bladder to approximately 180 mmHg.	
	o Twist the pressure control valve slightly to the left to release the pressure slowly.	Emphasize the need to release the pressure slowly. If the pressure drops too fast, the needle will sweep down the gauge too quickly to be read accurately. The pressure should be released at a speed that takes one second for the needle to move a single gradation (i.e., 2 millimeters of mercury) on the gauge.
	o Keep your eyes on the gauge and listen for the Korotkoff sounds.	Point out that the needle on the pressure gauge generally will "bounce" slightly when blood starts to spurt through the artery. Excuse the student and thank him or her for participating. Solicit students' questions

Aides	Lesson Plan	Instructor Notes
		concerning these procedures. Point out that "normal" values of blood pressure are: Systolic 120 - 140 Diastolic 70 - 90 Note, however, that "normal" people can have significantly different blood pressures: there is wide variation in human blood pressure.
	r. Do's and Don'ts of blood pressure measurement: o If you inflate the bladder and then need to repeat the measurement, wait at least three minutes to allow the subject's artery to return to normal. o Hold the bell of the stethoscope with your fingers; don't slide it under the cuff: that will distort the measurement.	Point out that if difficulty is encountered in hearing the Korotkoff sounds, try having the subject raise his/her arm and clench the fist to allow blood flow back to the heart.
	s. Students initial practice at measuring blood pressure.	If at least one sphygmomanometer and stethoscope are available for every two students, instruct students to practice in pairs. Otherwise, assign students to practice in teams of 3 or 4 members.
	3. Measurement of temperature.	
VI-12 (Measuring Temp)	a. Temperature is measured orally using a thermometer.	Exhibit this.

Aides	Lesson Plan	Instructor Notes
		Point out that the "normal" range for body temperature taken orally is 98.6 degrees +/- 1 degree.
	b. Make sure that a fresh disposable mouthpiece is used each time.	Solicit students' comments and questions concerning this overview of procedures and cues.
	c. Ensure that the subject does not take any hot or cold liquids by mouth prior to taking the temperature.	Point out that hot and cold liquids immediately prior to the temperature examination may effect the result.
	**C. Demonstrations**	
15 Minutes	1. Pulse rate measurement demonstrations.	Select two students to come before the class.
	a. Radial artery pulse point.	Instruct the first student to measure the second's pulse using the radial artery pulse point. (Simultaneously, the instructor should measure the subject's pulse using a carotid artery pulse point).
	b. Carotid artery pulse point.	Instruct the second student to measure the first's pulse using the carotid artery pulse point. (Simultaneously, the instructor should measure the subject's pulse using a radial artery pulse point.)
		Excuse the two students and thank them for participating.
	2. Blood pressure measurement demonstrations.	Select two other students to come before the class.

Aides	Lesson Plan	Instructor Notes
		Instruct the first student to measure the second's blood pressure. Have the students reverse roles. Excuse the two students and thank them for participating.
 **IV-13** (Normal Ranges of Vital Signs)	**D. Normal Ranges of Vital Signs** 1. Normal human vital signs vary between individuals. However, the DEC program has identified a set of "normal" ranges for each of the three vital sign examinations used in the drug influence evaluation process. The ranges used in the DEC program are normally a bit wider than those used by the medical profession. DEC normal ranges: a. Pulse rate: 60 to 90 beats per minute b. Blood Pressure: Systolic: 120 - 140 mmHg Diastolic: 70 - 90 mmHg c. Body Temperature: 98.6 degrees, plus or minus 1 degree.	Remind students that the "normal" ranges identified for the DEC program have been established through years of research and with medical input. However, normal ranges may vary from individual to individual and are normally a little wider than those used by the medical profession.
 **15 Minutes**	**E. Relationship of Drug Categories to the Vital Signs Examinations.**	Note: Draw the Matrix (at the end of this session) on the dry erase board or flip-chart at the outset of this session.

Aides	Lesson Plan	Instructor Notes
	1. All seven categories of drugs ordinarily will affect pulse rate and blood pressure.	
	2. Two of the categories usually will <u>lower</u> pulse and blood pressure.	Ask the students which categories will lower pulse rate and blood pressure.
	a. Narcotic Analgesics usually lower pulse and BP.	Write "DOWN" on the pulse and blood pressure lines under the columns for Depressants (with the footnote except ETOH and Quaaludes) and Narcotics. Instructors Note: According to the Physician's Desk Reference, one of the adverse reactions to Soma is Tachycardia.
	b. So do CNS Depressants. Some exceptions include ETOH, Soma and Quaaludes.	
	3. The other five categories all tend to elevate pulse rate.	Write "UP" on the pulse line under the five remaining columns.
	4. Most of the drug categories that elevate pulse rate also elevate blood pressure.	
	a. CNS Stimulants, Hallucinogens, Dissociative Anesthetics and Cannabis all usually cause blood pressure to rise.	<u>Write</u> "UP" on the blood pressure line for those four categories.
	b. The vast majority of Inhalants -- namely, the volatile solvents and the aerosols -- also elevate blood pressure.	
	c. But the remaining small group of Inhalants -- the anesthetic gases -- actually lower the blood pressure.	<u>Remind</u> students that the anesthetic gases include such things as nitrous oxide, amyl nitrite and ether.
	d. So for Inhalants, we can say	<u>Write</u> up/down with the

Aides	Lesson Plan	Instructor Notes
	about the effect on blood pressure is that it will be up or down.	footnote - down with anesthetic gases, up with volatile solvents and aerosols on the blood pressure line under the Inhalants column.
	5. Three of the categories usually will cause the body temperature to rise.	Ask students which categories usually cause an elevation in body temperature.
	a. The drug PCP and its analogs from the Dissociative Anesthetics category usually increases body temperature; PCP users have been known to remove their clothing to cool down.	Write "UP" on the "TEMP" line under the Dissociative Anesthetics column.
	b. CNS Stimulants and Hallucinogens also will usually increase body temperature.	Write "UP" on the "TEMP" line for CNS Stimulants and Hallucinogens.
	6. The effect of Inhalants on body temperature depends on the specific substance that is inhaled.	Write "up/down/or normal" on the "TEMP" line for Inhalants.
	a. Some inhalants may cause temperature to increase or be down.	
	b. But other inhalants may leave the temperature near normal.	
	7. One category usually causes body temperature to be lowered.	Ask students which category usually lowers temperature.
	a. Narcotic Analgesics usually lower body temperature.	Write "DOWN" on the "TEMP" line for Narcotics.
	8. The remaining two categories	Write "NORMAL" on the

Aides	Lesson Plan	Instructor Notes
	usually do not affect temperature.	"TEMP" line for Depressants and Cannabis. Solicit students' questions and comments.
 **70 Minutes**	**F. Practice** 1. Assignments and procedures. a. Team assignments. b. Explanation of practice procedures: o Teammates will take turns measuring each other's pulse rate and blood pressure. o Each student will write down every measurement he or she makes and the time at which the measurement was made. o Whichever member of the team is not engaged in taking the measurement or in serving as the "suspect" will act as a coach and offer appropriate constructive criticism to his or her teammate. o Practice will continue until each student has taken at least three complete pulse and blood pressure measurements on both	Group the students into teams of three (3) members each. Each team must have at least one blood pressure kit. Solicit questions about the

Aides	Lesson Plan	Instructor Notes
	teammates. 2. Testing (students testing students).	practice procedures. Monitor the practice to ensure compliance with the procedures. Offer coaching and constructive criticism as appropriate.

	DEPRESS	STIMULS	HALLUCS	D/A	NARCOTS	INHALS	CANNABIS
PULSE							
BLOOD PRESS							
TEMP							

REVIEW QUESTIONS

1. Where is the radial artery pulse point?

   Crease of the wrist

2. Why should you never attempt to feel a subject's pulse with your thumb?

   You can mistakenly measure your own pulse

3. Does an artery carry blood to the heart or from the heart?

   Away from the heart

4. What does the symbol "Hg" represent?

   Mercury (Hydrargyrum)

5. What is diastolic pressure?

   The pressure when the heart relaxes

6. When do the Korotkoff Sounds begin?

   At the systolic level when the blood begins to spurt through the brachial artery

7. Name and describe the major components of a sphygmomanometer.

   Compression Cuff, Pressure bulb, Manometer, Pressure control valve, Tubes

8. Which of the seven categories of drugs generally will cause pulse rate to be elevated?

   CNS Stimulants, Hallucinogens, Dissociative Anesthetics, Inhalants, Cannabis

9. What is the normal range of body temperature?

   98.6 +/- 1 degree

10. For how long must a DRE count the beats to obtain a measurement of pulse rate?

30 seconds

11. What is the normal range of pulse rate?

60-90 bpm

12. Which categories of drugs usually lower body temperature?

Narcotic Analgesics

13. What is the normal range for the higher value of blood pressure? What is the normal range for the lower value?

120-140/70-90

Session VI - Examinations of Vital Signs

Objectives

- Define basic terms relevant to pulse rate and blood pressure measurements
- Measure pulse rate
- Measure blood pressure
- Relate the expected results of vital signs examinations to the various categories of drugs

Definitions Concerning "Pulse"

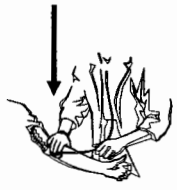
- **PULSE**
  The expansion and relaxation of an artery generated by the pumping action of the heart.
- **PULSE RATE**
  The number of pulsations in an artery per minute.
- **ARTERY**
  A strong, elastic blood vessel that carries blood from the heart to the body tissues.
- **VEIN**
  A blood vessel that carries blood back to the heart from the body tissues.

Radial Artery

Radial Artery
Pulse Point

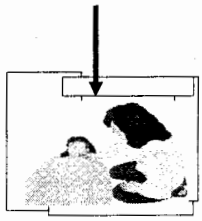
Brachial Artery

Brachial Artery
Pulse Point



Carotid Artery

Carotid Artery
Pulse Point



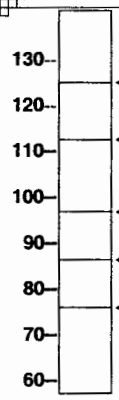
Definitions Concerning "Blood Pressure"

- **Blood Pressure**
  The force that the circulating blood exerts on the walls of the arteries.
- **Systolic Pressure**
  The maximum blood pressure, reached as the heart contracts.
- **Diastolic Pressure**
  The minimum pressure, reached when the heart is fully expanded.

The Basics of Blood Pressure Measurement

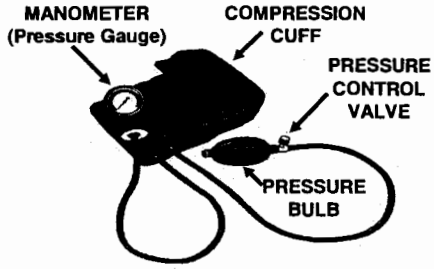
- Apply enough air pressure to cut off the flow of blood through the artery.
- Slowly release the air, about 2 mmHg per second, until the blood just begins to spurt through the artery: THAT WILL BE THE SYSTOLIC PRESSURE.
- Continue to release the air until the blood flows continuously: THAT WILL BE THE DIASTOLIC PRESSURE.

Korotkoff Sounds



- Phase 1 begins (SYSTOLIC) CLEAR, TAPPING SOUNDS
- Phase 2 begins SOUNDS CHANGE TO MURMUR, TAKE ON A "SWISHING" QUALITY
- Phase 3 begins SOUNDS DEVELOP A LOUD, KNOCKING QUALITY
- Phase 4 begins SOUNDS BECOME MUFFLED, "SWISHING"
- Phase 5 begins (DIASTOLIC) THE SOUNDS CEASE

Sphygmomanometer



Details of Blood Pressure Measurement

1. Position cuff on bicep so that tubes extend down middle of arm
2. Wrap cuff snugly around bicep
3. Clip manometer to the subject's sleeve or in a location to easily see the gauge
4. Twist pressure control valve all the way to the right
5. Put stethoscope earpieces in your ears
6. Apply the stethoscope to the brachial artery pulse point
7. Rapidly inflate bladder to a level high enough to squeeze the artery shut. (Normally 180)
8. Twist the pressure control valve slightly to the left (pressure should drop at 2 mmHg per second)
9. Keep your eyes on the gauge and listen for the Korotkoff sounds

Measuring Body Temperature

- Oral thermometer recommended
- Always use protective disposable mouthpiece
- Position thermometer under the subject's tongue
- Have subject refrain from talking when measuring temperature
- Refrain from letting subject drink hot or cold fluids immediately prior to measuring temperature

Normal Ranges of Vital Signs

DRE "Normal Ranges"

- **Pulse Rate:**
  60 to 90 beats per minute
- **Blood Pressure:**
  Systolic – 120 to 140 mmHg
  Diastolic – 70 to 90 mmHg
- **Body Temperature:**
  98.6 degrees Fahrenheit plus or minus one degree

Questions?

Seventy-Five Minutes

SESSION VII

OVERVIEW OF SIGNS AND SYMPTOMS

SESSION VII OVERVIEW OF SIGNS AND SYMPTOMS

Upon successfully completing this session the student will be able to:

- Give examples of specific drugs belonging to the seven drug categories.
- Describe the major signs and symptoms of impairment associated with each category.

CONTENT SEGMENTS

A. CNS Depressants

B. CNS Stimulants

C. Hallucinogens

D. Dissociative Anesthetics

E. Narcotic Analgesics

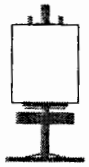
F. Inhalants

G. Cannabis

H. Wrap-Up

LEARNING ACTIVITIES

- Interactive Discussions

Aides	Lesson Plan	Instructor Notes
	**OVERVIEW OF SIGNS AND SYMPTOMS**	
75 Minutes		Display Session Title
		
VII-1 (Title)		
		Briefly review the content, objectives and activities of this session.
VII-2 (Objectives)		
		Note: Prior to the start of this session, draw the matrix found at the end of this session on the dry erase board or flip-chart.
	1. Sign: An observable or detectable indicator of drug influence. (i.e., dilated pupils, vital signs)	Frequently the term "objective symptoms" is used in law enforcement to refer to "signs".
	2. Symptom: A subjective indicator of drug influence that is reported by the drug-impaired subject. (i.e., "I feel nauseous.")	
	**A. CNS Depressants**	
10 Minutes	1. Central Nervous System Depressants is a category that includes many different drugs.	Ask students to name some examples of CNS Depressants. Make sure that the examples given include alcohol, some barbiturates and some tranquilizers.

Aides	Lesson Plan	Instructor Notes
	2. Indicators of CNS Depressant influence found in eye exams.	Ask students: "Do depressants cause Horizontal Gaze Nystagmus?"
	a. HGN usually will be present.	Write "Present" on the "HGN" line for Depressants. Ask: "Do Depressants cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus may be present, especially with high doses (for that individual) of Depressants.	Write "Present" on the "VERT NYST" line for Depressants. Denote in parentheses above "(High Doses)". Ask: "Do Depressants cause the eyes to be unable to converge?"
	c. Under the influence of Depressants, Lack of Convergence usually will be present.	Write "Present" on the "LACK CONV" line for Depressants. Ask: "How do Depressants affect pupil size?"
	d. Depressants usually do not affect pupil size; therefore, Depressants usually leave the pupils near normal in size.	Write "Normal" on the "PUPIL SIZE" line for Depressants.
	o But some specific Depressant drugs do affect pupil size.	Ask: "What are the Depressants that affect pupil size?"
	o Methaqualone (Quaaludes) and Soma usually cause the pupils to dilate.	Put a (1) next to "Normal" and write "Common exceptions: Soma and Quaaludes " below the matrix.
	e. Depressants generally will cause pupillary reaction to light to be sluggish.	Write "Slow" on the "RCTN-LIGHT" line for Depressants.

Aides	Lesson Plan	Instructor Notes
	3. Indicators of CNS Depressant influence found in checks of the vital signs.	Ask: "How do Depressants affect pulse rate?"
	a. Depressants usually lower pulse rate.	Write "Down" on the "PULSE" line for Depressants.
	o But some specific Depressant drugs may elevate the pulse.	Ask: "What are the Depressants that may elevate pulse rate?"
	o Methaqualone (Quaaludes) and alcohol may cause an elevation in pulse rate.	Put a (2) next to "Down" and write "Quaaludes and ETOH may elevate" below the matrix.
		Ask: "How do Depressants affect blood pressure?"
	b. Depressants usually lower blood pressure.	Write "DOWN" on the "BLOOD PRESS" line for Depressants.
		Ask: "How do Depressants affect body temperature?"
	c. Depressants usually leave temperature near normal.	Write "Normal" on the "TEMP" line for Depressants.
		Solicit students' questions about CNS Depressants.
	**B. CNS Stimulants**	
10 Minutes	1. The category called Central Nervous System Stimulants includes many drugs.	Ask students to name some examples of CNS Stimulants. Make sure the examples include cocaine and some amphetamines.
	2. Indicators of CNS Stimulant influence found in eye exams.	Ask students: "Do CNS Stimulants cause Horizontal Gaze Nystagmus?"
	a. HGN will not be present.	Write "None" on the "HGN"

Aides	Lesson Plan	Instructor Notes
		line for CNS Stimulants. Ask: "Do CNS Stimulants cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus will not be present.	Write "None" on the "VERT NYST" line for CNS Stimulants. Ask: "Do CNS Stimulants cause the eyes to be unable to converge?"
	c. Under the influence of CNS Stimulants, the eyes should still be able to converge; therefore, lack of convergence will not be present.	Write "None" on the "LACK CONV" line for CNS Stimulants. Ask: "How do CNS Stimulants affect pupil size?"
	d. CNS Stimulants usually cause the pupils to dilate.	Write "Dilated" on the "PUPIL SIZE" line for CNS Stimulants.
	e. We have seen that CNS Depressants effect pupillary reaction; similarly, CNS Stimulants may cause a slowing in the pupillary reaction to light.	Write "Slow" on the "RCTN-LIGHT" line for CNS Stimulants.
	3. Indicators of CNS Stimulant influence found in checks of vital signs.	Ask: "How do CNS Stimulants affect pulse rate?"
	a. CNS Stimulants usually increase pulse rate.	Write "Up" on the "PULSE" line for CNS Stimulants. Ask: "How do CNS Stimulants affect blood pressure?"

Aides	Lesson Plan	Instructor Notes
	b. CNS Stimulants usually increase blood pressure.	Write "Up" on the "BLOOD PRESS" line for CNS Stimulants. Ask: "How do CNS Stimulants affect body temperature?"
	c. CNS Stimulants usually elevate body temperature.	Write "Up" on the "TEMP" line for CNS Stimulants.
	d. Though not directly related to the vital signs, the evaluator may find the subjects muscle tone to be rigid with possible body tremors. A grinding of the teeth , referred to as "bruxism", may also be noticed.	Point out that, as shown on the matrix, the signs of Stimulant influence are almost exactly opposite to the signs of Depressant influence. Solicit students' questions about CNS Stimulants.
	**C. Hallucinogens**	
10 Minutes	1. Hallucinogens include some naturally occurring substances as well as some synthetic drugs.	Ask students to name some hallucinogenic drugs. Make sure the examples include some natural Hallucinogens as well as some synthetics.
	2. Indicators of Hallucinogen influence found in eye exams.	Ask students: "Do Hallucinogens cause Horizontal Gaze Nystagmus?"
	a. HGN will not be present.	Write "None" on the "HGN" line for Hallucinogens. Ask: "Do Hallucinogens cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus will not be present.	Write "None" on the "VERT NYST" line for Hallucinogens.

Aides	Lesson Plan	Instructor Notes
		Ask: "Do Hallucinogens cause the eyes to be unable to converge?"
	c. Under the influence of Hallucinogens, the eyes should still be able to converge; therefore, lack of convergence will not be present.	Write "None" on the "LACK CONV" line for Hallucinogens. Ask: "How do Hallucinogens affect pupil size?"
	d. Hallucinogens usually cause the pupils to dilate.	Write "Dilated" on the "PUPIL SIZE" line for Hallucinogens.
	e. Normally Hallucinogens do not effect pupillary reaction to light. o However, psychedelic amphetamines will cause a slowing in the pupillary reaction.	Write "Normal" on the "RCTN-LIGHT" line for Hallucinogens. Put a (3) next to "Normal", and write psychedelic amphetamines cause slowing.
	3. Indicators of Hallucinogen influence found in checks of vital signs.	Ask: "How do Hallucinogens affect pulse rate?"
	a. Hallucinogens usually increase pulse rate.	Write "Up" on the "PULSE" line for Hallucinogens. Ask: "How do Hallucinogens affect blood pressure?"
	b. Hallucinogens usually increase blood pressure.	Write "Up" on the "BLOOD PRESS" line for Hallucinogens. Ask: "How do Hallucinogens affect body temperature?"
	c. Hallucinogens usually elevate body temperature.	Write "Up" on the "TEMP" line for Hallucinogens. Point out that, as shown on the matrix, the major signs of

Aides	Lesson Plan	Instructor Notes
		Hallucinogen influence are identical to the major signs of Stimulant influence. If we only had these major signs to go by, it would be impossible to distinguish between someone under the influence of CNS Stimulants from someone under the influence of Hallucinogens. Point out that, in their seven-day DRE School, the students will learn of more subtle indicators that help to distinguish Hallucinogen influence from Stimulant influence. But emphasize that it <u>is</u> often difficult to distinguish between these two categories. Solicit students' questions about Hallucinogens.
 **10 Minutes**	**D. Dissociative Anesthetics** 1. The category called Dissociative Anesthetics consists of the drug PCP, its various analogs and Dextromethorphan. a. An 'analog' of PCP is a drug that is a 'chemical first cousin' of PCP; that is, it is a drug that has a slightly different molecular structure from that of PCP, but produces the same effects as PCP.	Ask students: "What does 'analog' mean in this context?"

Aides	Lesson Plan	Instructor Notes
	b. One of the most popular analogs of PCP is the drug called Ketamine.	Write "Ketamine: An analog of PCP" on the dry erase board or flip-chart.
	c. Ketamine is a legally-manufactured (but controlled) drug that is used as an anesthetic in some surgical applications.	
	d. Some other analogs of PCP include <u>Ketalar, Ketaset and Ketajet.</u>	
	e. Dextromethorphan is a drug found in numerous over-the-counter substances.	<u>Point out</u> that Dextromethorphan, also known as DXM is a widely abused substance and is easy to obtain.
	2. Indicators of the Dissociative Anesthetic drug PCP and its analogs influence found in eye exams.	Ask students: "Do Dissociative Anesthetics cause Horizontal Gaze Nystagmus?"
	a. HGN usually will be present, and often with a very early onset with the drug PCP.	Write "Present" on the "HGN" line for Dissociative Anesthetics. INSTRUCTOR NOTE: Both HGN and VGN were noted in various DRE evaluations conducted on persons impaired by DXM. Research has also confirmed HGN in persons impaired by DXM. Ask: "Do Dissociative Anesthetics cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus usually will be present.	Write "Present" on the "VGN" line for Dissociative

Aides	Lesson Plan	Instructor Notes
		Anesthetics. Ask: "Do Dissociative Anesthetics cause the eyes to be unable to converge?"
	c. Lack of Convergence usually will be present.	Write "Present" on the "LACK CONV" line for Dissociative Anesthetics. Ask: "How does Dissociative Anesthetics affect pupil size?"
	d. Dissociative Anesthetics do not normally affect pupil size; therefore, a person under the influence of a Dissociative Anesthetic, such as PCP usually will have pupils that are near normal in size.	Write "Normal" on the "PUPIL SIZE" line for Dissociative Anesthetics. INSTRUCTOR NOTE: Actual DRE evaluations conducted on persons impaired by DXM resulted in pupils in the normal ranges.
	e. Dissociative Anesthetics normally will not effect pupillary reaction to light.	Write "Normal" on the "RCTN-LIGHT" line for this category.
	3. Indicators of Dissociative Anesthetic influence found in checks of vital signs.	Ask: How do Dissociative Anesthetics affect pulse rate?"
	a. Dissociative Anesthetics usually increases pulse rate.	Write "Up" on the "PULSE" line for this category. Ask: "How do Dissociative Anesthetics affect blood pressure?"
	b. Dissociative Anesthetics usually elevates blood pressure.	Write "Up" on the "BLOOD PRESS" line for this category.

Aides	Lesson Plan	Instructor Notes
		Ask: "How do Dissociative Anesthetics affect body temperature?"
	c. PCP and its analogs usually elevate body temperature. Dextromethorphan may or may not rise temperature.	Write "Up" on the "TEMP line for this category. Point out that PCP tends to produce the eye indicators associated with Depressants, and the vital sign indicators associated with CNS Stimulants or Hallucinogens. Solicit students' questions about Dissociative Anesthetics.
	**E. Narcotic Analgesics**	
10 Minutes	1. Narcotic Analgesics include some natural derivatives of opium as well as some synthetic drugs.	Ask students to name some examples of Narcotic Analgesics. Make sure the examples include some natural opiates as well as some synthetics.
	2. Indicators of Narcotic Analgesic influence found in eye exams.	Ask students: "Do Narcotics cause Horizontal Gaze Nystagmus?"
	a. HGN will not be present.	Write "None" on the "HGN" line for Narcotics. Ask: "Do Narcotics cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus will not be present.	Write "None" on the "VGN" line for Narcotics.
	c. Under the influence of Narcotics, the eyes should	Ask: "Do Narcotics cause the eyes to be unable to converge?"

Aides	Lesson Plan	Instructor Notes
	still be able to converge; therefore, Lack of Convergence usually is not present.	Write "None" on the "LACK CONV" line for Narcotics. Ask: "How do Narcotics affect pupil size?"
	d. Narcotic Analgesics usually cause a very noticeable constriction of the pupils.	Write "Constricted" on the "PUPIL SIZE" line for Narcotics.
	e. Though there is always some reaction to light, the constricted pupils caused by Narcotic Analgesics make it nearly impossible to perceive a change in pupil size. However, when observed it will generally be little or none visible.	Write "Little or None Visible" on the "RCTN-LIGHT" line for Narcotics.
	3. Indicators of Narcotic Analgesic influence found in checks of vital signs.	Ask: "How do Narcotics affect pulse rate?"
	a. Narcotics usually lower pulse rate.	Write "Down" on the "PULSE" line for Narcotics. Ask: "How do Narcotics affect blood pressure?"
	b. Narcotics usually lower blood pressure.	Write "Down" on the "BLOOD PRESS" line for Narcotics. Ask: "How do Narcotics affect body temperature?"
	c. Narcotics usually lower body temperature.	Write "Down" on the "TEMP" line for Narcotics. Point out that Narcotics and Depressants tend to produce

Aides	Lesson Plan	Instructor Notes
		similar indicators in the vital signs, but very different indicators in the eyes. Solicit students' questions about Narcotic Analgesics.
 **10 Minutes**	**F. Inhalants** 1. The category of Inhalants includes a wide variety of gases and fumes that have the power to intoxicate. 2. Not all Inhalants affect their users in exactly the same way. a. There is probably less consistency in the signs and symptoms of Inhalants than there is with any other category. b. When we talk of the signs and symptoms of Inhalants, we often must qualify our statements. c. For example, we may say that a particular effect will be observed "for <u>most</u> Inhalants".	Ask students to name some commonly abused Inhalants.
	3. Indicators of Inhalant influence found in eye exams.	Ask students: "Do Inhalants cause HGN"
	a. With <u>most</u> Inhalants, HGN usually will be present.	Write "Present" on the "HGN" line for Inhalants.

Aides	Lesson Plan	Instructor Notes
		Ask: "Do Inhalants cause Vertical Gaze Nystagmus?"
	b. With most Inhalants, Vertical Gaze Nystagmus may be present, especially with large doses.	Write "Present" on the "VGN" line for Inhalants. Denote in parentheses above "(High Doses)".
		Ask: "Do Inhalants cause the eyes to be unable to converge?"
	c. Under the influence of Inhalants, Lack of Convergence usually will be present.	Write "Present" on the "LACK CONV" line for Inhalants. Ask: "How do Inhalants affect pupil size?"
	d. The effect of Inhalants on pupil size depends on the particular substance inhaled. o Most Inhalants usually leave the pupils near normal in size. o Some Inhalants may cause pupil dilation.	Write "Normal" on the "PUPIL SIZE" line for Inhalants. Put a (4) next to "Normal", and write "Normal, may be dilated." below the matrix.
	e. Depending on the substance used, Inhalants may cause a slowed reaction to light or the pupils may react normally. However, the most frequently observed effect will be a sluggish reaction to light.	Write "Slow" on the "RCTN-LIGHT" line for Inhalants.
	4. Indicators of Inhalant influence found in checks of vital signs.	Ask: "How do Inhalants affect pulse rate?"

Aides	Lesson Plan	Instructor Notes
	a. Inhalants usually elevate pulse rate.	Write "Up" on the "PULSE" line for Inhalants. Ask: "How do Inhalants affect blood pressure?"
	b. Most Inhalants usually elevate blood pressure, but some lower blood pressure.	Write "Up/Down" on the "BLOOD PRESS" line for Inhalants. Put a (5) Next to "Up/Down" and write down with "Anesthetic Gases and "UP" with "Volatile Solvents and Aerosols". Ask: "How do Inhalants affect body temperature?"
	c. The effects of Inhalants on temperature depend on the particular substance inhaled.	Write "Up/Down/or Normal" on the "TEMP" line for Inhalants. Solicit students' questions about Inhalants.
	**G. Cannabis**	
10 Minutes	1. Indicators of Cannabis influence found in eye exams.	Ask students: "Does Cannabis cause Horizontal Gaze Nystagmus?"
	a. HGN will not be present.	Write "None" on the "HGN" line for Cannabis. Ask: "Does Cannabis cause Vertical Gaze Nystagmus?"
	b. Vertical Gaze Nystagmus will not be present.	Write "None" on the "VERT NYST" line for Cannabis. Ask: "Does Cannabis cause the eyes to be unable to converge?"
	c. Under the influence of	Write "Present" on the "LACK

Aides	Lesson Plan	Instructor Notes
	Cannabis, Lack of Convergence will be present.	CONV" line for Cannabis. Point out that Cannabis is the only category that causes Lack of Convergence but does not cause nystagmus. Ask: "How does Cannabis affect pupil size?"
	d. Under the influence of Cannabis, the pupils may be dilated or possibly normal in size.	Write "Dilated" on the "PUPIL SIZE" line for Cannabis. Put a (6) next to "Dilated", and write "Possibly normal".
	e. The pupillary reaction to light will appear normal when under the influence of Cannabis.	Write "Normal" on the "RCTN-LIGHT" line for Cannabis.
	2. Indicators of Cannabis influence found in checks of vital signs.	Ask: "How does Cannabis affect pulse rate?"
	a. Cannabis usually elevates pulse rate.	Write "Up" on the "PULSE" line for Cannabis. Ask: "How does Cannabis affect blood pressure?"
	b. Cannabis usually elevates blood pressure.	Write "Up" on the "BLOOD PRESS" line for Cannabis. Ask: "How does Cannabis affect body temperature?
	c. Cannabis usually leaves temperature near normal.	Write "Normal" on the "TEMP" line for Cannabis. Solicit students questions about Cannabis.

Aides	Lesson Plan	Instructor Notes
 **5 Minutes**	**H. Wrap-Up**	Point out that the matrix summarizes the major signs of drug influence that are examined by DREs. But emphasize there are other signs that a DRE considers in reaching a determination as to the category or combination of drugs affecting a particular subject. These additional signs will be covered in depth during the seven-day DRE School. Solicit students' questions.

	DEPRESS	STIMULS	HALLUCS	D/A	NARCOTS	INHALS	CANNABIS
HGN							
VGN							
LACK CONV							
PUPIL SIZE							
RCTN-LIGHT							
PULSE RATE							
BLOOD PRESS							
TEMP							

Session VII - Overview of Signs and Symptoms

Objectives

- Give examples of specific drugs belonging to the seven drug categories.
- Describe the major signs and symptoms of impairment associated with each category.

One Hour and Thirty Minutes

SESSION VIII

ALCOHOL AS A DRUG

SESSION VIII ALCOHOL AS A DRUG

Upon successfully completing, this session the student will be able to:

- Describe a brief history of alcohol.
- Identify common types of alcohols.
- Describe the physiologic processes of absorption, distribution and elimination of alcohol in the human body.
- Describe dose response relationships that impact on alcohol's impairing effects

CONTENT SEGMENTS

A. A Brief Overview of Alcohol

B. Physiological Processes

C. Dose-Response Relationships

D. Questions for Review

LEARNING ACTIVITIES

- Instructor-led Presentations
- Oral Quiz

Aides	Lesson Plan	Instructor Notes
	**ALCOHOL AS A DRUG**	Display Session Title
90 Minutes		
		Briefly review the objectives, content and learning activities of this session.
VIII-1 (Title)		**POSE** this question to the class: "This is a course on <u>drug</u> impairment recognition; why do we have a session on <u>alcohol</u>?"
		
VIII-2 (Objectives)		**GUIDE** the students' responses to bring out these and other appropriate points: (1) Alcohol is a drug, and in fact is the most commonly abused drug. (2) As DREs, the students will often encounter persons who are under the combined influence of alcohol and some other drug. (3) <u>Point out:</u> By understanding the basic fundamental concepts of how alcohol effects the body, students will gain a better understanding of the concept of how drugs effect the body.
		
HS 172A R1/06	VIII-3	

Aides	Lesson Plan	Instructor Notes
25 Minutes		
 **VIII-3** (Alcohol)	**A. A Brief Overview of Alcohol**	
	1. The word "alcohol" refers to a number of distinct but similar chemicals.	
	a. Each of the chemicals that is called an "alcohol" is composed of the three elements: hydrogen, carbon, and oxygen.	
	b. Each of the "alcohols" is a <u>drug</u> within the scope of our definition.	Clarification: All of the "alcohols" are chemicals that impair driving ability.
	c. But only one can be tolerated by the human body in substantial quantities.	Clarification: Most "alcohols" are highly toxic, and will cause blindness or death if consumed in significant quantities. Only one is intended for human consumption.
		ASK STUDENTS: What are the names of some of the chemicals that are "alcohols"?
 **VIII-4** (Some Types)	2. Three of the more commonly-known "alcohols" are Methyl, Ethyl and Isopropyl.	
	a. Methyl Alcohol, also known as Methanol, or "wood alcohol".	
	b. Ethyl Alcohol, also known as Ethanol, or "beverage alcohol".	EMPHASIZE: Ethanol is the only kind of alcohol that humans can tolerate in significant quantities.

Aides	Lesson Plan	Instructor Notes
	c. Isopropyl Alcohol, also known as Isopropanol, or "rubbing alcohol".	
	3. Ethanol is the kind of alcohol on which we will focus, because it is the only type intended for human consumption.	
 **VIII-5** (Ethanol)	a. Ethanol is the active ingredient in beer, wine whiskey and other alcoholic beverages intended for drinking.	
	b. Like all "alcohols", ethanol is composed of hydrogen, carbon and oxygen.	
 **VIII-5** (ETOH)	c. Chemists use a number of different symbols to represent ethanol.	
	d. We will stick with the symbol "ETOH".	Instructor, for your information: The "ET" represents "ethyl", and the "OH" represents an oxygen atom and hydrogen atom, bonded together in what the chemists refer to as the "hydroxy radical". All alcohols have an hydroxy radical in their molecules.
	4. Ethanol has been around for a long time. People drank it long before they learned to write.	
 **VIII-6** (Production)	5. Ethanol is a naturally occurring drug. That is, it is produced through a process called fermentation.	<u>Selectively reveal the first part only</u>.

Aides	Lesson Plan	Instructor Notes
	a. In fermentation, spores of yeast, carried by the wind, come in contact with fruit or grain that has fallen to the ground.	
	b. Sugars in the fruit or grain chemically react with the yeast, and produce ethanol.	POINT OUT that humans almost certainly first encountered ethanol that had been produced accidentally in this fashion.
	6. Of course, today we don't sit around waiting for the wind to bring yeast to fallen fruit: Most fermentation takes place on purpose, under controlled conditions.	
	7. Through the process of fermentation, we can produce a beverage that has, at most, about 14% ethanol.	ASK STUDENTS: "Why can't fermentation produce a higher ethanol concentration than 14%?"
	a. When the ethanol concentration reaches 14%, the yeast die, so fermentation stops.	
	b. If we want to have a higher concentration ethanol beverage, we have to use another step in the production.	Reveal the lower part of visual.
VIII-6 (Distillation)		
	8. Distillation is the process used to produce a higher concentration of ethanol.	
	a. In distillation, a fermented beverage is heated to the point where the ethanol begins to boil.	POINT OUT that ethanol starts to boil at a lower temperature than does water.

Aides	Lesson Plan	Instructor Notes
	b. The ethanol vapor is collected and allowed to cool until it turns back into a liquid.	
	c. By repeating the process of heating the liquid and collecting and cooling the vapors, higher and higher concentrations of ethanol can be produced.	
	d. Ethanol beverages that are produced by distillation are called distilled spirits.	ASK STUDENTS to name some "distilled spirits" (e.g., whiskey; vodka; gin; rum; etc.)
	9. Over the centuries in which people have produced ethanol, some standard sized servings of different beverages have evolved.	
 **VIII-7A** (Standard - Beer)	a. Beer is usually served in 12-ounce cans or bottles. Since beer averages an ethanol concentration of four percent, a can or bottle contains a bit less than one-half ounce of pure ethanol.	Reveal only the "beer" part.
 **VIII-7B** (Standard - Wine)	b. Wine typically is served in a four-ounce glass. At an ethanol concentration of 12 percent, the glass of wine also has just a bit less than one-half ounce of pure ethanol.	Reveal the "wine" part of visual.
	c. Whiskey and other distilled spirits are dispensed in a "shot" glass, which usually contains one and one-quarter ounces of liquid.	Reveal the "whiskey" part of visual.

Aides	Lesson Plan	Instructor Notes
 **VIII-7C** (Standard - Whiskey)	d. Since whiskey usually has an ethanol concentration of 40%, a "shot" of whiskey has exactly one-half ounce of pure ethanol.	POINT OUT that the "proof" of a distilled spirit is equal to twice the ethanol concentration.
	10. For all practical purposes, standard sized servings of beer, wine and whiskey all pack the same "punch".	SOLICIT students comments and questions on this overview of alcohol.
 **35 Minutes**	**B. Physiologic Processes**	
	1. Alcohol is the most abused drug in the United States.	
 **VIII-8** (Alcohol/Drug Abuse)	2. Ethanol is a Central Nervous System Depressant:	
	a. It doesn't impair until it gets into the brain.	
	b. It can't get into the brain until it first gets into the blood.	
	c. It can't get into the blood until it first gets into the body.	Point out: This concept is true with all drugs that impair.
	3. There are a number of ways in which alcohol can get into the body.	
	a. It can be **injected** into a vein, via hypodermic needle.	
	b. It can be **inhaled**, i.e., alcohol fumes can be	Point out that a person would have to inhale concentrated

Aides	Lesson Plan	Instructor Notes
	brought into the lungs, and some molecules will pass into the blood. c. It could also be **inserted** as an enema and ingested by quickly passing from the large intestine into the blood.	alcohol fumes for a prolonged period of time in order to develop a significant blood alcohol concentration.
 **VIII-9** (Absorption)	d. But the vast majority of times that alcohol gets into the body, it gets their via **drinking**. 4. Once the alcohol is in the stomach, it will take two routes to get into the blood.	
 **VIII-9A**	a. One interesting thing about alcohol is that it is able to pass directly through the stomach walls. b. Under normal conditions, about 20% of the alcohol a person drinks gets into the blood by diffusing through the walls of the stomach.	POINT to that "route of passage" on visual.
 **VIII-9B**	c. But most of the alcohol usually passes through the base of the stomach into the **small intestine**, from which it passes quickly into the blood.	POINT to that "route of passage" on visual.

Aides	Lesson Plan	Instructor Notes
	5. Another interesting thing about alcohol is that it does not have to be digested before it can move from the stomach to the small intestine. a. When a person eats food, the food must remain for a time in the stomach. b. Acids and enzymes in the stomach must begin to break down the food to prepare it to pass to the lower portion of the gastrointestinal track.	
 **VIII-9C**	c. While the initial digestive process is underway, a muscle at the base of the stomach will constrict, and shut off the passage to the small intestine. d. That muscle is called the pylorus, or pyloric valve. 6. Since alcohol doesn't have to be digested, the pylorus does not constrict when alcohol enters the stomach. a. If we drink on an empty stomach, the pylorus stays wide open. b. The alcohol will pass immediately through the base of the stomach, into the small intestine, and quickly move into the bloodstream.	POINT to the pylorus on the visual.

Aides	Lesson Plan	Instructor Notes
	7. But what will happen if there is food in the stomach when the person drinks alcohol?	POSE this question to the class.
 **VIII-9D**	a. Food will cause the pylorus to constrict. b. While the pylorus is closed, nothing will move from the stomach to the small intestine. c. Any alcohol that is in the stomach will be "trapped" there, along with the food. d. The alcohol will not get into the blood as quickly, and the blood alcohol concentration will not get as high, as if the drinking had been done on an empty stomach. e. While the alcohol is trapped in the stomach, the acids and enzymes will start to react with it and break it down. f. By the time the pylorus opens, some of the alcohol will have been chemically changed, so there will be less available to get into the blood.	
		SOLICIT students' comments and questions about the absorption of alcohol into the blood.
VIII-10A (Distribution)	9. Once the alcohol gets into the blood, the blood will carry it to the various tissues and organs of the body.	<u>Reveal top part only</u>.

Aides	Lesson Plan	Instructor Notes
 **VIII-10B** (Basic Principle)	a. Alcohol is attracted to water. The blood will deposit the alcohol in all the parts of the body where water is found. b. Parts of the body that have a lot of water will receive a lot of alcohol. c. Parts of the body that have only a little water will receive little alcohol.	Now reveal lower part of visual.
 **VIII-11** (Which Parts ..)	10. Which parts of the body have a lot of water? a. The brain b. The liver c. Muscle tissue d. The kidney	POSE this question, and solicit responses from students. Then, display the <u>first part</u> of visual.
 **VIII-11A**	11. Which parts contain very little water? a. Bones b. Fatty tissue	POSE this question and solicit responses from students. Then, display the <u>second part</u> of visual.
 **VIII-11B**	12. The muscle tissue will receive a relatively high proportion of the alcohol that a person drinks.	POINT to "muscle tissue" on visual.
 **VIII-11C**	13. The fatty tissue will receive very little of the alcohol.	POINT to "fatty tissue" on visual.

Aides	Lesson Plan	Instructor Notes
 **VIII-11D** (The average..)	14. Here is an interesting and significant difference between men and women: pound-for-pound, the average male has much more water in his body than the average female.	NOW REVEAL the last part of visual. ASK students to suggest <u>why</u> this significant difference exists.
	a. The female body has more fatty tissue than does the male body. b. Pound-for-pound, the average female has more fat and less muscle than does the average male. c. Since fatty tissue has very little water, the average female, pound-for-pound, has less water than the average male.	Clarification: the female's extra fatty tissue serves as a "shock absorber" and thermal insulator to protect a baby in the womb.
	d. This means that the average woman has fewer places in her body in which to deposit the alcohol she drinks. 15. The woman's blood alcohol concentration will be higher than the man's, because she has less water in which to distribute the alcohol.	ASK STUDENTS: Suppose a woman and a man who weigh exactly the same drink exactly the same amount of alcohol under exactly the same conditions. Who will reach the higher BAC? Solicit students' comments and questions about the distribution of alcohol in the body.
 **VIII-12** (Elimination)	16. As soon as alcohol gets into the body, the body begins working to get rid of it.	<u>Reveal only the top part</u> of visual.

Aides	Lesson Plan	Instructor Notes
 **VIII-12A** (Direct ...)	a. Some alcohol is simply expelled directly from the body, i.e., on the breath, in the sweat, in urine, etc.	Reveal the middle part of visual.
	b. Relatively little of the alcohol we drink is directly expelled from the body.	Clarification: Only about 2-10% of the alcohol we consume is directly excreted in the breath, urine, etc.
 **VIII-12B**	c. The body eliminates most of the alcohol by chemically breaking it down.	ASK STUDENTS: What organ in the body is primarily responsible for chemically breaking the alcohol down? Reveal the bottom part of visual.
	d. The liver is primarily responsible for breaking down, or metabolizing, the alcohol.	Clarification: Some metabolism of alcohol also takes place in other parts of the body, including the brain. But the liver does the vast majority of the job.
 **VIII-13A** (Metabolism)	17. Metabolism of alcohol actually consists of a slow, controlled burning of the alcohol.	Reveal the first "bullet" of visual.
	a. In the burning process, the alcohol combines with oxygen.	Reveal the second "bullet".
 **VIII-13B**	b. The liver has an enzyme called alcohol dehydro-genase, which helps to speed up the reaction of oxygen with the alcohol.	Clarification: The enzyme does not react with the alcohol itself, but simply makes it easier for the oxygen to react with the alcohol. The technical term for something that helps a chemical reaction while not

Aides	Lesson Plan	Instructor Notes
		itself taking part in the reaction is a catalyst. Alcohol dehydrogenase is a catalyst for the metabolism of alcohol.
 **VIII-13C**	c. The reaction of alcohol with oxygen ultimately produces carbon dioxide and water, which can be directly expelled from the body.	Reveal the third "bullet".
 **VIII-13D**	d. The speed with which the liver burns alcohol varies from person to person, and will change from time to time for any particular person. e. BUT ON THE AVERAGE: Due to metabolism, a person's BAC will drop by about 0.015 per hour.	Reveal the final "bullet".
		POSE this problem to the class: Suppose a person reaches a peak BAC of 0.15. How long will it take for his or her body to eliminate all of the alcohol? Answer: ten hours [0.15-(X hours)(0.015/hour) X = 10]
	18. For the average male, a BAC of 0.015 is equal to the alcohol content of about two-thirds of a "standard drink". a. i.e., about two-thirds of a can of beer.	

Aides	Lesson Plan	Instructor Notes
	b. Or about two-thirds of a glass of wine, or two-thirds of a shot of whiskey. 19. For the average woman, a BAC of 0.015 is equal to the alcohol content of only one-half of a "standard drink". a. So the average male can "burn up" about two-thirds of a drink in an hour. b. But the average female can only burn up about one-half of a drink in an hour. c. In other words: Suppose a person gulps down a can of beer, or a glass of wine, or a shot of whiskey; if the person is an average man, it will take him about an hour and one-half to burn up that alcohol; if the person is a woman, it will take her about two hours. 20. How can we speed up the metabolism of alcohol? a. We can't speed it up. b. Drinking coffee won't help. c. A cold shower won't help. d. Exercise won't help. 21. Our livers take their own sweet time burning the alcohol.	POSE this question to the class. Solicit students' comments and questions about the elimination of alcohol from the body.

Aides	Lesson Plan	Instructor Notes
 **10 Minutes** 	**C. Symptomatology of Alcohol** ALCOHOL HGN ---> present VGN ---> (high dose) present LACK CONV ---> present PUPIL SIZE ---> normal RCTN-LIGHT ---> slow PULSE RATE ---> down BLOOD PRESS ---> down TEMP ---> normal 1. Indicators of Alcohol influence found in Eye Exams. a. HGN will be present. b. Vertical Gaze Nystagmus may be present, especially with high doses (for that individual) of alcohol.	Note: Prior to the start of this session, draw the following chart on the dry erase board or flip-chart. Point out that ETOH may elevate the pulse rate in lower BAC levels. Ask students: "What category of drugs is alcohol most closely associated?" Write "Present" on the "HGN" line. Ask: "Does Alcohol cause Vertical Gaze Nystagmus?" Write "Present" on the "VGN" line. Denote in parentheses "(High Doses)".

Aides	Lesson Plan	Instructor Notes
		Ask: "Does alcohol cause the eyes to be unable to converge?"
	c. Under the influence of alcohol, Lack of Convergence frequently will be present.	Write "Present" on the "LACK CONV" line. Ask: "How do Depressants affect pupil size?"
	d. Alcohol does not affect pupil size; therefore, alcohol usually leaves the pupils normal in size.	Write "Normal" on the "PUPIL SIZE" line.
	e. Alcohol will cause pupillary reaction to light to be sluggish.	Write "Slow" on the "RCTN-LIGHT" line.
	2. Indicators of alcohol influence found in checks of vital signs.	
		Ask: "How does alcohol affect pulse rate?"
	a. Pulse rate will normally be down. However, some subjects have been found to have elevated pulse rates at lower BACs..	Write "Down"on the "PULSE" line. Refer to matrix exception for pulse. Ask: "How does Alcohol affect blood pressure?"
	b. Blood pressure response to alcohol will normally be down.	Write "Down" on the "BLOOD PRESS" line.
		Ask: "How does alcohol affect body temperature?"
	c. Alcohol usually leaves temperature near normal.	Write "Normal" on the "TEMP" line. Solicit students' questions about the signs and symptoms of alcohol.

Aides	Lesson Plan	Instructor Notes
	**D. Dose-Response Relationships**	
20 Minutes		
	1. What does "Blood Alcohol Concentration" mean?	(Reveal only the question at the top)
VIII-14A (BAC)		Solicit students' responses.
	a. Blood alcohol concentration means the number of grams of pure ethanol that are found in every 100 milliliters of a person's blood.	Reveal the middle part of visual.
VIII-14B		
	b. A gram is a measure of weight; it takes almost 500 grams to make a pound.	Instructor, for your information: It actually takes 454 grams to make a pound.
	c. A milliliter is a measure of volume. It takes about 500 milliliters to make a pint.	Example: A 12-ounce can of beer has about 350 milliliters.
	d. The so-called "illegal limit" of BAC is 0.08 in all states.	Reveal the bottom part of visual.
VIII-14C	e. If a person has a BAC of 0.08, it means there is 0.08 grams (g) of ethanol in every 100 milliliters (ml) of his/her blood.	Point out that in 2005, all 50 states have adopted 0.08 BAC. Point out that BAC results are reported in a variety of units. Two common variations are milligrams/milliliters and percent. There are 1000 milligrams (mg) in one gram; therefore, 0.08 grams equals 80 milligrams (mg) and a BAC of 0.08 would be reported as 80 mg of ethanol/100 ml of blood.

Aides	Lesson Plan	Instructor Notes
		Percent means parts of 100.
	2. How much alcohol does a person have to drink to reach a BAC of 0.08?	POSE this question to the class.
	a. Take an average male weighing 175 pounds and in reasonably good physical shape.	
	b. Assume he does his drinking on an empty stomach.	
	c. He would have to gulp down about 4 or 5 cans of beer, or 4 or 5 glasses of wine, or five shots of whiskey in a fairly short period of time to reach 0.08 BAC.	
	d. In terms of pure ethanol, that would amount to just about two and one-half fluid ounces, or about two shot glasses.	DISPLAY two standard-sized shot glasses, filled with water.
	e. If these two shot glasses were filled with pure ethanol, we would have just enough of the drug to bring an average man to a BAC of approximately 0.10.	HOLD up the two shot glasses while posing the next question.
	f. So answer this: Does it take a <u>lot</u> of ethanol to impair a person, or only a <u>little</u>?	Solicit students' responses to the question.
	3. In one respect, it certainly doesn't take much ethanol to impair: Just two full shot glasses will more than do the trick for a full-sized man.	HOLD up the glasses again.

Aides	Lesson Plan	Instructor Notes
	4. BUT COMPARED TO OTHER DRUGS, it takes an enormous quantity of ethanol to cause impairment.	
VIII-15A (Grams...)	5. In order to compare ethanol to other drugs, we have to review some more units of weight.	Reveal only the first "bullet".
 **VIII-15B**	a. We're already familiar with the gram. It weighs only about one five-hundredth of a pound.	Now reveal the second "bullet".
	b. The milligram is much lighter still; it takes one thousand milligrams to make a gram.	Instructor, for your information: The prefix "milli" derives from the latin word mille, meaning one thousand.
	c. That means it takes nearly five hundred thousand milligrams to make a pound.	
 **VIII-15C**	d. If one gram is equal to one thousand milligrams, then one-tenth of a gram is equal to one hundred milligrams.	Now reveal the third "bullet". Clarification: 100 is one-tenth of 1,000.
 **VIII-15D**	e. So a person with a BAC of 0.10 has 100 milligrams of ethanol in every 100 milliliters of his or her blood.	Now reveal the remainder of visual.

Aides	Lesson Plan	Instructor Notes
 **VIII-16A** (More on ...)	f. That is exactly the same as saying there is one milligram of ethanol in every one milliliter of blood.	Reveal only the first "bullet".
	6. Here is a new term: the nanogram.	
	a. It takes a million nanograms to make a milligram.	
 **VIII-16B**	b. That means it takes one <u>billion</u> nanograms to make a gram.	Now reveal the parenthetic sentence on visual.
 **VIII-16C**	c. And that means that it takes almost five hundred billion nanograms to make a single pound.	Now reveal the second "bullet" on visual.
 **VIII-16D**	d. So if a person's BAC is 0.10, he or she has one million nanograms of pure ethanol in every milliliter of blood.	Now reveal the question at the bottom of visual.
	7. What kinds of concentrations of other drugs does it take to produce impairment?	<u>Don't</u> solicit responses to this question; it is purely rhetorical.
 **VIII-17A** (Drug ...)	8. IT IS MOST IMPORTANT to understand that we cannot state exact correspondences between alcohol concentrations and other drug concentrations.	Reveal only the "alcohol" segment of the visual.

Aides	Lesson Plan	Instructor Notes
	a. For example, we can say that someone with a blood alcohol concentration between 0.05 and 0.10 will exhibit significant impairment, because there is a large body of scientific research that backs up that statement.	
 **VIII-17B**	b. So we can say that research shows that significant impairment will be found, with alcohol, at concentrations of 500,000 to one million nanograms per milliliter.	POINT to the alcohol line on visual.
	c. But we can't say exactly how much cocaine, or THC, or morphine or any other drug it would take to produce exactly the same impairment that we would find at 0.10 BAC.	
	d. In part, this is because we do not have extensive scientific research for most other drugs.	
	e. But also it is because many other drugs do not impair in the same way that alcohol impairs.	EXAMPLE: Unlike alcohol, some other drugs (such as THC and PCP) readily deposit in fatty tissue, and may continue to cause impairment even after they have cleared from the blood.
	9. Nevertheless, based on the available research, it is possible to make some general statements about drug concentrations that can safely be said to induce significant	

Aides	Lesson Plan	Instructor Notes
	driving impairment.	
	a. First example: Amphetamines	Reveal the Amphetamine line on visual.
VIII-17C	b. Researchers agree that if we had two shot glasses full of pure amphetamine, we'd have enough to impair as many as ten thousand people.	HOLD UP the two shot glasses again. ASK STUDENTS: What if these shot glasses were full of pure THC, the active ingredient in Cannabis?
	c. Second example: Cannabis	Reveal the Cannabis (THC) line on visual.
VIII-17D	d. Available evidence suggests that if these two little glasses were full of pure THC, we'd have enough drug to impair as many as twenty thousand people.	ONCE AGAIN, hold up the two shot glasses. ASK STUDENTS: But what if these glasses were full of pure LSD?
	e. Many researchers believe that significant impairment results from very low LSD concentrations.	Reveal the LSD line on visual.
VIII-17E		
	f. If these two glasses contained pure LSD, we could impair up to one million people.	
	10. What does all this mean?	NOTE: This is a rhetorical question.
	a. First, it means that, compared to alcohol, most other drugs are very powerful: A little goes a very long way.	Example: A person who is "only" carrying one fluid ounce of LSD (hold up one shot glass) would be capable of impairing "only" the entire population of, say, Wyoming.
	b. Second, it means that laboratories may be stretched to	

the limits of their technologic capabilities when we send them samples and request certain drug analyses.

c. All analytic techniques have detection thresholds, i.e., minimum concentrations of drugs that must be present if a scientific confirmation of the presence of the drug is to be obtained.

d. If the concentration of the drug is less than the detection threshold, the laboratory simply will not be able to confirm that the drug is present.

e. The problem is that some people will be significantly impaired at drug concentrations that are <u>below</u> the lab's detection threshold.

f. What this means is that a DRE sometimes examines a subject, concludes correctly that he or she is under the influence of a certain drug category, perhaps even obtains an admission from the subject that he has taken a drug, gets a toxicological sample and sends it off to the lab, ONLY TO HAVE THE LAB REPORT BACK THAT "NO DRUGS WERE FOUND".

11. When this happens to you -- and it will -- it is important that you don't let yourself become

Aides	Lesson Plan	Instructor Notes
	discouraged. a. As a DRE, all you are expected to do is the best that you <u>can</u> do, given the tools available. b. You will never become perfect in your diagnosis of drug impairment. c. There will be times when you will "miss" the fact that a subject is impaired. d. And there may times when you will conclude that a subject is under the influence of a drug when, in fact, he or she isn't. e. We rely on the laboratory to corroborate our opinions, to help make sure that an innocent person is not punished because of an honest mistake in judgment on our part. f. The problem is that the laboratory isn't perfect either: The toxicologists won't always be able to corroborate your opinion, even though your opinion is accurate.	SOLICIT students' comments and questions about dose-response relationships involving alcohol and other drugs.

Aides	Lesson Plan	Instructor Notes
 **10 Minutes**	**E. Questions for Review** Refer to the Question and Answer Key on the following pages.	Direct students to turn to the review questions, at the end of Section VIII of their Student Manual. POSE each question to the class, and solicit responses. Make sure all students understand the correct answers. SOLICIT students' comments and questions about "Alcohol as a Drug".

REVIEW QUESTIONS

1. Name three different chemicals that are alcohols. Which of these is beverage alcohol, intended for human consumption? What is the chemical symbol for beverage alcohol?

   Answers: Methyl, Ethyl and Isopropyl (or Methanol, Ethanol and Isopropanol or Wood Alcohol, Beverage Alcohol and Rubbing Alcohol). Ethanol is the beverage intended for human consumption. The four letter chemical symbol for alcohol is ETOH.

2. What is the name of the chemical process by which beverage alcohol is produced naturally? What is the name of the process used to produce high-concentration beverage alcohol?

   Answers: <u>Fermentation. Distillation</u>.

3. Multiple Choice: "Blood alcohol concentration is the number of _____ of alcohol in every 100 milliliters of blood."

   A. grams
   B. milligrams
   C. nanograms

   Answer: Correct answer is <u>A, "grams"</u>

4. True or False: Pound-for-pound, the average woman contains more water than does the average man.

   Answer: <u>False.</u> The average woman actually has a good deal less water, pound for pound, than the average man. She has about 55% water, he is about 68% water.

5. What do we mean by the "proof" of an alcoholic beverage?

   Answer: "Proof" means twice the ethanol percentage of the beverage. For example, 80 proof vodka is 40% ethanol.

6. Every chemical that is an "alcohol" contains what three elements?

   Answer: The three elements common to all alcohols are <u>carbon, hydrogen and oxygen.</u>

7. True or False: Most of the alcohol that a person drinks is absorbed into the blood via the small intestine.

Answer: The statement is <u>true.</u> Under normal conditions, about 80% of the ethanol in the stomach will pass through the pyloric value into the small intestine, from which it will quickly move into the bloodstream.

8. What is the name of the muscle that controls the passage from the stomach to the lower gastrointestinal tract?

Answer: The muscle is called the <u>pylorus, or pyloric valve</u>.

9. True or False: Alcohol can pass directly through the stomach walls and enter the bloodstream.

Answer: The statement is <u>true</u>. Usually, about 20% of the ethanol a person drinks diffuses through the stomach walls to enter the blood.

10. Multiple Choice: Suppose a man and a woman who both weigh 160 pounds arrived at a party and started to drink at the same time. And suppose that, two hours later, they both have a BAC of 0.10. Chances are ....

A. he had more to drink than she did.
B. they drank just about the same amount of alcohol.
C. he had less to drink than she did.

Answer: <u>"A", more to drink.</u>

11. In which organ of the body does most of the metabolism of the alcohol take place?

Answer: The liver is where most metabolism takes place.

12. What is the name of the enzyme that aids the metabolism of alcohol?

Answer: Alcohol dehydrogenase is the enzyme that serves as a catalyst for alcohol's metabolism in the liver.

13. Multiple Choice: Once a person reaches his or her peak BAC, it will drop at a rate of about _____ per hour.

A. 0.025 B. 0.015 C. 0.010

Answer: "B", 0.015 percent. (But remember, this is an average value, with wide variations among individuals).

14. Multiple Choice: If a person has a blood alcohol concentration of 0.10, then there are _____ nanograms of alcohol in every milliliter of his or her blood.

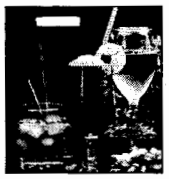
    A. one million
    B. one hundred thousand
    C. ten thousand
    D. one thousand
    E. one hundred

    Answer: "A", one million

15. True or False: It takes about thirty minutes for the average 175-pound man to "burn off" the alcohol in one 12-ounce can of beer.

    Answer: The statement is false. The average 175 pound man will need more like ninety minutes to metabolize the alcohol.

Session VIII – Alcohol As A Drug



Objectives

- Describe a brief history of alcohol
- Identify common types of alcohol
- Describe the physiologic processes of absorption, distribution and elimination of alcohol in the human body
- Describe dose response relationships that impact on alcohol's impairing effects

Alcohol

A family of closely-related chemicals whose molecules are made up of hydrogen, carbon and oxygen.

Some Types of Alcohol

METHYL ALCOHOL *(Methanol)*

ETHYL ALCOHOL *(Ethanol)*

ISOPROPYL ALCOHOL *(Isopropanol)*

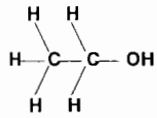
Ethanol

Ethyl Alcohol
(Intended for human consumption)

Chemical Symbols

ETOH

C_2H_5OH



Production of Ethanol

- **FERMENTATION**

  Yeast combines with sugars from fruit or grains in a chemical reaction that results in ETOH

- **DISTILLATION**

  Fermented beverage is boiled at a controlled temperature to extract and concentrate the ethanol fumes

Standard-Sized Drinks

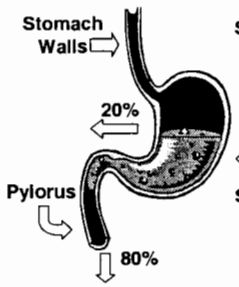
- CAN OF BEER
  12 ounces of fluid @ 4% alcohol
  equals 0.48 ounces of pure alcohol

- GLASS OF WINE
  4 ounces of fluid @ 12% alcohol
  equals 0.48 ounces of pure alcohol

- SHOT OF WHISKEY (80-Proof)
  1 and 1/4 ounces @ 40% alcohol
  equals 0.50 ounces of pure alcohol

Alcohol is a CNS Depressant

Absorption of Alcohol



Getting the ethanol out of the stomach and into the blood

Distribution of Alcohol

Getting the ethanol into the body's tissues and organs

Basic Principle:
Ethanol goes wherever it finds water

Which parts of the body have lots of water?

The BRAIN The LIVER MUSCLE Tissue

Which parts don't?

Bones FATTY Tissue

The average male is 68 percent water

The average female is only 55 percent water

Elimination of Alcohol

Getting the ethanol out of the body:

Direct Excretion:
Breath, sweat, tears, urine, etc.

Metabolism:
Primarily in the liver

Metabolism in the Liver

- The liver burns the ethanol (i.e., causes a chemical reaction of ethanol with oxygen)
- The process is aided by an enzyme called alcohol dehydrogenase
- The ultimate products of the chemical reaction are carbon dioxide and water
- Due to metabolism, the average person's BAC drops by about 0.015 per hour

Blood Alcohol Concentration

What does it mean?

BAC is the number of grams of alcohol found in 100 milliliters of the person's blood.

Example

If a person has a BAC of .08, it means there is 0.08 grams of ethanol in every 100 milliliters (ml) of his or her blood.

Grams, Milligrams and Nanograms

- A "gram" is pretty light (it takes almost 500 grams to make one pound)
- One gram is equal to one thousand milligrams.
- One-tenth of a gram therefore is equal to one hundred milligrams.

So if a person has a BAC of 0.10, he or she has 100 milligrams of alcohol in every 100 milliliters of blood. That is the same as one milligram in every milliliter.

More on Grams and Nanograms

- One milligram is equal to one million nanograms. (A nanogram is *very* light: it takes almost 500 billion of them to make a pound.)
- A person whose BAC is 0.10 has one million nanograms of alcohol in every milliliter of blood.

How does alcohol compare with other drugs?

Drug Concentrations Typically Associated With "Significant" Impairment

DRUG	NANOGRAMS per MILLILITER
ALCOHOL	500,000 to 1,000,000
AMPHETAMINES	100 to 300
THC	50 to 100
LSD	1 to 2

Questions?

Thirty Minutes

SESSION IX

PREPARING FOR THE DRE SCHOOL

SESSION IX PREPARING FOR THE DRE SCHOOL

Upon successfully completing this session the student will be informed of the logistical and other arrangements necessary for their participation in the seven day DRE School.

SESSION IX GUIDE

Review the following points with the students:

a. Dates of the seven-day school

b. Location of the school

c. Dress code

d. Materials that the students should bring to the school

e. Transportation arrangement (if applicable)

f. Lodging arrangements (if applicable)

g. Recreational facilities and opportunities (if appropriate)

Tell the students to open their manuals to Session IX. Point out that a detailed description of "Things you will need at the DRE School" is presented there. Also point out that some very important suggestions of "things to do prior to the DRE School" are given there. Emphasize that the students will be expected to be fully prepared when they come to the school. This is also a good time for the students to begin preparation of their professional Curriculum Vitae (C.V.). A worksheet for the C.V. is provided on the following page and is located in Session IX of the DRE student manual.

DRE CURRICULUM VITAE (C.V.) WORKSHEET

Formal Education

- High School
- College
- Specialized College / Vocational Courses

Formal Professional Training

- Academy
- Specialized Police Training
- Other Specialized / Professional Training

Relevant Experience

- Job Experience (Law Enforcement)
- Other Job-related Experiences
- Drug Enforcement / Evaluation Experience
- Court Qualifications

Outside Readings - (relative to the DEC program)

Session IX – Preparing for the DRE School

Objectives

Upon successfully completing this session the student will be informed of the logistic and other arrangements necessary for their participation in the seven-day DRE school.

Seven-Day DRE School

- Dates
- Location
- Dress Code
- Material Needed
- Transportation
- Lodging
- Other

Forty-Five Minutes

SESSION X

CONCLUSION OF THE PRELIMINARY TRAINING

SESSION X CONCLUSION OF THE PRELIMINARY TRAINING

Upon successfully completing this session the student will have:

- Demonstrated his or her knowledge of the concepts covered during the DRE Pre-School.
- Offered anonymous comments and criticisms concerning the school.

CONTENT SEGMENTS	LEARNING ACTIVITIES
A. Post-Test and Critique	o Written Examinations
B. Certificates and Dismissal	

Aides	Lesson Plan	Instructor Notes
45 Minutes	**CONCLUSION OF THE PRELIMINARY TRAINING**	Display Session Title
 **X-1** (Title)		
 **X-2** (Objectives)		Briefly review the content, objectives and activities of this session.
35 Minutes	**A. Post-Test and Critique** 1. Post-test	Hand out copies of the post-test. Allow about 15 minutes for students to complete the test.
	2. Critique	Hand out copies of the Student's Critique Form. Allow about 15 minutes for students to complete the critique.
	3. Review of Post-test	Go over the post-test questions. Limit this review to 10 minutes. Instruct the students to retain the Pre-School post-test as a study guide for the upcoming DRE School. Collect the completed critiques.

Aides	Lesson Plan	Instructor Notes
 **10 Minutes**	**B. Certificates and Dismissal**	Hand out certificates of course completion. Hand back the students' Certification Progress Logs, after making sure than an instructor has signed the Pre-School line on each log. Remind the students that they must bring the progress logs with them to the DRE School. Tell the students to open their manuals to Session X. Point out the "Post Test" that is given there. Emphasize that the "Post Test"is a very useful study device that will help them get ready for the DRE School. Urge them to take the "Test" as a self-study exercise at least once between now and the start of the school. Thank the students for their participation.

Session X – Conclusion of the Preliminary Training

Objectives

- Demonstrate knowledge of the concepts covered during the training
- Offer anonymous comments and criticisms concerning the school

Course Location _____ Date _____

Preliminary Training For Drug Evaluation and Classification
Student's Critique Form

A. Course Objectives

Please indicate whether you feel that you personally achieved the following course objectives.

	Yes	No	Not Sure
Can you define the term "drug" and name the seven drug categories?			
Can you identify the twelve major components of the drug recognition process?			
Can you administer and interpret the psychophysical tests used in a drug evaluation?			
Can you conduct the eye examinations used in the evaluations?			
Can you check the vital signs used in the evaluation?			
Can you list the major signs and symptoms associated with each drug category?			
Can you describe the history and physiology of alcohol as a drug?			

B. Course Activities

Please rate how helpful each workshop session was for you personally. Also, please rate the quality of instruction (subject knowledge, instructional techniques and learning activities). Use a scale from 1 to 5 where: 5=Excellent, 4=Very Good, 3=Good, 2=Fair, 1=Poor.

	Session/ Activity	Quality
Overview of Drug Evaluation and Classification Procedures		
The Psychophysical Tests		
The Eye Examinations		
Alcohol Workshop		
Examination of Vital Signs		
Overview of Signs and Symptoms		
Alcohol as a Drug		
Preparing for the DRE School		

C. Course Design

Please indicate your own personal feeling about the accuracy of each statement.

	Agree	Disagree	Not Sure
1. I wish we had more practice with drinking volunteers.			
2. There was too much "bull throwing" in this course.			
3. I now have a much better idea as to what the drug recognition process is all about.			
4. The course was at least one-half day too long.			
5. I got a great deal of practical, useful information from this course.			
6. I'm still pretty confused as to what the drug recognition process is all about.			
7. I think I could do a pretty good job conducting a drug evaluation right now, without additional training.			
8. This course should have been at least one-half day longer.			
9. We spent too much time with the volunteer drinkers session.			
10. Some of the practice sessions in this course were dragged out a bit too much.			
11. I don't think that our instructors were as well prepared as they should have been.			
12. This course was a good review, but it really didn't teach me anything new.			
13. I am very glad that I attended this course.			
14. The instructors seemed to be more interested in practicing their teaching skills than in seeing to it that we learned what we were supposed to learn.			
15. I would have to say that this course was not quite as good as I expected it to be.			

D. Suggestions for Deletion and Additions

If you absolutely had to cut four hours out of this course, what would you delete or shorten?

_____

_____

_____

If you could add four hours to this course, how would you spend the extra time?

_____

_____

_____

E. Ratings of the Course and the Instructors

On a scale from 1 (=very poor) to 5 (=excellent), please give your opinion of the course as a whole.

The course as a whole: _____

On a scale from 1 (=very poor) to 5 (=excellent), please give your opinion of each instructor.

Instructor	Rating

F. Final Comments and Suggestions

Please offer any final comments that you wish to make.

_____

_____

_____

_____